Networked Resilience: Achieving Inter-organizational and Intergovernmental

Collaboration

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by

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PROFESSIONAL EXPERIENCE

City of Philadelphia, Office of Emergency Management

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Deputy Director for Planning
- Lead all-hazard planning efforts and manage critical infrastructure and training and exercise programs
- Serve as senior advisor to City Emergency Management Coordinator
- Manage activations of emergency operations center and field response operations

Department of Homeland Security (DHS): Advisor & Consultant

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Independent advisor and consultant
- Provided research and analytical services to support the planning and execution of the largest cybersecurity exercise to date (National Level Exercise 2012).
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National Consortium for the Study of Terrorism & Responses to Terrorism (START), University of Maryland

June 2008-August 2008
Department of Homeland Security Fellow
- Conducted historical investigation of radicalization processes across a wide spectrum of ideological movements

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2005-2007
Special Assistant to the Deputy Administrator, Federal Emergency Management Agency, DHS
- Analyzed preparedness and planning issues at direction of Deputy Administrator.
- Coordinated Homeland Security Presidential Directive-8 planning and implementation activities.

Special Assistant to the Director, Office of Community Preparedness, DHS
- Researched and managed the implementation of a capabilities-based planning methodology for emergency management at the federal, state, and local levels.

Researcher, DHS Lessons Learned Information Sharing Program (LLIS.gov)
- Researched State/local intelligence and information sharing and Emergency Medical System (EMS) lessons learned and best practices.
- Provided research and analytical support to the interagency review effort resulting in the February 2006 White House Report entitled, *The Federal Response to Hurricane Katrina: Lessons Learned.*

PUBLICATIONS
- Contributor, *Perspectives on Preparedness: Taking Stock since 9/11*, Report to Congress of the Local, State, Tribal, and Federal Preparedness Task Force, September 2010.
- "Turning off autopilot: Towards a sustainable drone policy," *Harvard National Security Journal,* NSJ Analysis: Featured Online Article, March 6, 2010.
- "Disconnecting the Battle of Ideas from the Battle of Arms: Leadership, Strategy, and Ideology in the New Al Qaeda," *Harvard International Review,* May 11, 2008.
- Russell D. Howard and Erik Iverson, "Fight Al Qaeda's plan, not its ideas," *The Christian Science Monitor*, April 30, 2008, page 9 print edition, also available online.
- "A Revolution in Informational Affairs: Why al-Qaeda is Winning the War of Ideas and What We Can Do About It," *Fletcher Forum of World Affairs,* Vol. 32.3 Special Edition 2008.
- Contributor, *Nationwide Plan Review: Phase II Report,* June 15, 2006.
- Contributor, *The Federal Response to Hurricane Katrina: Lessons Learned.* The White House, Washington D.C., February 2006.
- "Jemaah Islamiyyah: Ideological Bridging and the Rise of Islamist Terror in Southeast Asia," *Mentis Vita*, Georgetown University [Winter 2006, VI.ii].

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2012   Bradley Foundation PhD Dissertation Fellowship
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2012-2013 **Regional Director**, Truman National Security Project
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Abstract

The proliferation of complex problems and increasing profile of collective action problems place a premium on the capacity of organizations to collaborate. This study examines collaboration in the context of domestic incident management within the United States in order to explore why organizations experience varying levels of collaborative performance during crisis response scenarios.

This research surveys a multi-disciplinary literature to develop a theoretical framework that describes the most decisive factors affecting inter-organizational and intergovernmental collaboration. Historical reconstruction, process-tracing, and inductive analytic techniques underpin two case studies examining the collaborative performance of the U.S. Coast Guard and the Federal Emergency Management Agency in the aftermath of Hurricane Katrina in 2005 and the U.S. Coast Guard following the Deepwater Horizon incident in 2010. Through theoretically structured analysis, these cases advance scholarly understanding of inter-organizational and intergovernmental collaboration and provide important insights for policymakers regarding domestic incident management and interagency collaboration more broadly.

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Chapter 1: Introduction

> "A crisis is a terrible thing to waste."
> Professor Paul Romer, Stanford University [1]

Hurricane Katrina crashed into the Louisiana coast early in the morning of August, 29th, 2005. Almost five years later, on April 20th, 2010, the drilling pipe aboard the Deepwater Horizon, a technologically advanced deepwater drilling rig stationed 42 miles Southeast of Venice, Louisiana, shook violently as a highly combustible mix of drilling mud and pressurized hydrocarbons rocketed to the surface. Both incidents marked the opening salvos of profound national tragedies and precipitated massively complex national response efforts.

The national responses to these dual Gulf Coast catastrophes revealed a great deal about America's developing ability to manage domestic incidents. Reams of reports have catalogued scores of lessons learned and recommendations designed to improve the ability of government and non-governmental responders to mobilize a swift and sure response to catastrophic incidents. Invariably, these recommendations have called for greater collaboration and coordination. Yet, scholars and policymakers alike struggle to provide actionable guidance to leaders that will help them improve the capacity of their organizations to collaborate spontaneously in dynamic and uncertain catastrophic contingencies.

This research begins to address this shortcoming by investigating the collaborative performance of select federal agencies in Hurricane Katrina and Deepwater

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[1] R. Daniels, D. Kettl, and H. Kunreuther, "Introduction," in *On Risk and Disaster: Lessons from Hurricane Katrina*, ed. R. Daniels, D. Kettl, and H. Kunreuther (Philadelphia: University of Pennsylvania Press, 2006), 2.

Horizon response operations. This research examines the inter-organizational and intergovernmental factors that affect collaborative capacity in two of the most trying real-world incidents in recent history. This research examines "collaborative capacity," or "the ability of organizations to enter into, develop, and sustain inter-organizational systems in pursuit of collective outcomes."[2] Specifically, this study answers three closely related questions:

Q1: Why do organizations attempting to collaborate in crisis response scenarios experience varying levels of collaborative performance?

    Q1A: What factors affect inter-organizational collaboration?

    Q1B: What factors affect intergovernmental collaboration?

This research project achieves some important firsts. In fact, it is the first academic study to conduct an in-depth comparative analysis of the Hurricane Katrina and Deepwater Horizon incidents.[3] Second, it synthesizes theories from many distinct disciplines among the social sciences to develop an integrated analytic framework that leverages the unique strengths of a diverse body of existing theories. Third, this project applies an original theoretical framework to complex real-world incidents using historical event reconstruction techniques to derive theoretically informed and policy-relevant findings.

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[2] S. Hocevar, G. F. Thomas, and E Jansen, "Building Collaborative Capacity: An Innovative Strategy for Homeland Security Preparedness," in *Innovation through Collaboration*, ed. M. M. Beyerlein, D. A. Johnson, and S. T. Beyerlein (New Yrok: Elsevier, 2006).

[3] Database searches conducted in August 2012 including Google Scholar and Proquest did not identify books, articles, or dissertations performing a detailed comparative analysis of operations related to Hurricane Katrina and the Deepwater Horizon incident.

This study examines collaboration in the context of domestic incident management because it provides unique analytic leverage that other types of collaboration research do not. The inherently complex study of collaboration in a real-world context benefits from research designs that hold as many exogenous variables constant as possible. Studies of collaboration in an international context suffer from excessive contextual variation and other complicating factors that undermine the comparability of cases and strain available methodologies. Other studies focus on artificial contexts that are significantly simpler than (and therefore less relevant to) domestic incident management or are sufficiently complex but rely on limited information. Instead, this study examines collaboration through a theoretically driven study of organizations responding to uncommonly well-documented incidents, within a common set of national institutions, in the same region, during similar time periods. Research findings will inform the efforts of scholars and policymakers to build institutions and manage organizations to collaborate and adapt in highly uncertain operating environments.

Significantly, these findings are applicable to organizations of all types. Similar challenges confront military commanders, policymakers in the intelligence community, and law enforcement officials in the realm of international security. To an ever-increasing degree, the problems posed by failing states, terrorists, insurgents, warlords, and criminal organizations, require collective responses characterized by swift and collaborative inter-organizational activity.[4] Nor are these challenges limited to the federal government;

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[4] Christopher Lamb and Evan Munsing describe the rise of "collaborative warfare" in their fascinating monograph on the performance of High-Value Targeting Teams in Iraq. Source: Christopher J. Lamb and Evan Munsing, "Secret Weapon: High-Value Target Teams as an

public and private sector organizations ranging from small-scale social service providers to the world's largest multi-national companies have learned to collaborate and lead network-level initiatives in recent years as traditional organizational boundaries have receded in significance. This research investigates why some organizations excel in this networked operating environment while others do not.

Collaboration in a Broader Context

Public and private organizations today face an environment very distinct from what they confronted in the 20th century. Globalization, the information revolution, and associated forces have rapidly overwhelmed the borders and boundaries that distinguished the industrial and bureaucratic organizations of times past. Yet, the way we understand and manage organizations and institutions has not kept pace with this shifting context. Simply put, "many of our problems are unsolvable because our systems of organizing are not geared for a highly interdependent environment."[5]

Threats and opportunities now present themselves in novel combinations in accelerating cycles, which makes the organizational environment unstable and unpredictable. As a result, organizations today cope with environmental turbulence that places a premium on interorganizational collaboration and adaptation.[6]

Organizational Innovation," in *Institute for National Strategic Studies Strategic Perspectives*, ed. Phillip C. Saunders (Washington, DC: National Defense University, 2011).

[5] B. Gray, *Collaborating: Finding Common Ground for Multiparty Problems* (San Francisco: Jossey-Bass, 1989), xviii.

[6] Per Emery and Trist, "Turbulence occurs when large, competing organizations, acting independently in diverse directions, create unanticipated and dissonant consequences for themselves and others." Source: F.E. Emery and E. Trist, "The Causal Texture of Organizaitonal Environments," *Human Relations* 18(1965); E. Trist, "A Concept of Organizational Ecology," *Australian Journal of Management* 2(1977). Similarly, Stephen Flynn describes the latticework of interdependencies in contemporary American society: Stephen Flynn, *The Edge of Disaster: Rebuilding a Resilient Nation* (New York: Random House, 2007), 63; Stephen Flynn, "America the Vulnerable," *Foreign Affairs* 81, no. 1 (2002).

We know that some organizations are better at collaborating than others but we do not know precisely why. This is significant because, "getting the institutions right is a difficult, time-consuming, conflict-ridden process."[7] Existing research focuses predominantly on preconditions and outcomes; the particular institutions, governance arrangements, and processes that the most skilled collaborative organizations use to capture the full benefits and minimize the costs of collaboration are under-specified.[8] We cannot significantly improve the "collaborative capacity" of some organizations until we can explain why select organizations are better at collaborating than others.[9] Consequently, the benefits of some collaborative ventures are under-exploited, the costs are inadequately controlled, and many potentially worthwhile opportunities are foregone altogether. More importantly, crucial collective action problems remain unresolved since no single organization can solve the multi-disciplinary challenges that are the defining issues of our age.

Structural Overview of Study

This study first reviews multidisciplinary theories related to collaboration and incident management in order to develop an integrated theoretical framework. The second chapter concludes with a discussion of the research methods employed in this study.

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[7] E. Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge: Cambridge University Press, 1990), 14.
[8] See the literature review that follows.
[9] Hocevar et. al. define collaborative capacity as: "the ability of organizations to enter into, develop, and sustain inter-organizational systems in pursuit of collective outcomes;" Source: GF Thomas, S Hocevar, and E Jansen, "A Diagnostic Approach to Building Collaborative Capacity in an Interagency Context," Graduate School of Business and Public Policy (Naval Postgraduate School, 2006).

The first case study examines the collaborative performance of the Coast Guard and the Federal Emergency Management Agency (FEMA) in Hurricane Katrina response operations. This case study summarizes the scope of the incident; details collaborative performance expectations as documented in statute, plans, and policies; and then contrasts this narrative with a detailed account of collaborative performance in execution through the reconstruction of a focused crisis chronology. This case examines a collaborative process structured by national disaster policy and managed from the "bottom-up." The case study concludes with an assessment of organizational failures, shortfalls, successes, and improvements on the basis of the theoretical criteria developed in the second chapter.

The second case study is similarly structured but provides a novel contrast. This case examines the performance of the Coast Guard during Deepwater Horizon response operations. This case examines a collaborative process structured by the national oil spill response doctrine and managed from the "top-down." This variation, in addition to other factors including organizational learning between the two incidents, provides insightful contrasts.

Collectively, these case studies identify the factors most pivotal to inter-organizational and intergovernmental collaboration. The next chapter reviews existing theory related to collaboration and domestic incident management and develops an integrated and multi-disciplinary framework of analysis that is then applied to the cases.

Chapter 2: Theory and Methods

Homeland security and emergency management policymakers manage risks in an increasingly complex, ambiguous, and turbulent environment. Recent events, ranging from the September 11, 2001, terrorist attacks to the Hurricane Katrina disaster to the Deepwater Horizon oil spill underscore the scope and severity of the challenge confronting policymakers. Contemporary threats and hazards require unprecedented collaborative responses crossing organizational, jurisdictional, and disciplinary boundaries.

This chapter evaluates a broad interdisciplinary literature to identify the key factors that affect the capacity of inter-organizational and intergovernmental organizations to collaborate prior to and in the aftermath of catastrophic crises. This chapter develops a multidisciplinary theoretical framework, which structures the case study analyses that follow.

This chapter begins with a discussion of definitions and concepts. Next, it reviews an interdisciplinary literature to develop five summary variables affecting inter-organizational collaborative capacity. These factors include inter-organizational power dynamics, collaborative culture, organizational learning and adaptation, unified command, and preparedness. The second half of the chapter reviews additional literatures to identify additional factors crucial to inter-governmental collaboration. These factors include shared goals, political coordination processes, and a common understanding of roles and responsibilities. The extended theoretical discussion that follows is synthesized

in abbreviated form in the section entitled "Selected factors affecting inter-organizational and intergovernmental collaboration" on page 91.

Table 1: Selected factors affecting inter-organizational and intergovernmental collaboration

Inter-organizational collaboration
1. Inter-organizational power dynamics
2. Collaborative culture
3. Organizational learning and adaptation
4. Unified command to provide:
    a. Shared situational awareness
    b. Interoperable communications
    c. Operational coordination
5. Preparedness

Intergovernmental collaboration
1. Goal agreement
2. Common understanding of roles and responsibilities
3. Political coordination process to provide:
    a. Resource brokering
    b. Conflict resolution

Definitions and concepts

The diversity of the theoretical literatures examining collaboration is expansive.[10] Although these literatures provide rich perspective, they fail to establish conceptual clarity. For example, Anne-Marie Thomson cites no fewer than 26 different definitions of "collaboration" in her research.[11] Each definition is a reflection of the precepts of the broader theories in which it is based. According to Van de Ven, an inter-organizational relationship occurs when two or more organizations exchange resources

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[10] AM Thomson documents authors writing on collaboration from the literatures on political theory, resource dependence, negotiated order theory, social problem-solving, cooperation theory, inter-organizational relations, and networks: AM Thomson, "Collaboration: Meaning and Measurement" (Indiana University, 1998), 24.

[11] Ibid., 69-70.

among each other.[12] He argues that collaborative relationships exist when member organizations seek to attain both collective and self-interested goals, employ interdependent processes, and develop a unique identity separate from its members. Barbara Gray, a proponent of negotiated order theory, defines collaboration as, "a process through which parties who see different aspects of a problem can constructively explore their differences and search for solutions that go beyond their own limited vision of what is possible."[13] Eugene Bardach, a scholar of public administration, defines collaboration as, "any joint activity by two or more agencies that is intended to increase public value by their working together rather than separately."[14] Morton Hansen, a management scholar, describes cross-unit collaboration within a single organization as what takes place when, "people from different units work together in cross-unit teams on a common task or provide significant help to each other."[15] Significantly, he argues that it is more than simple information sharing; it is an inherently human, interactive process that requires discipline and discretion.[16]

Yet, most of these definitions are too general to be useful for the purposes of this research. This research requires a definition that meets three criteria. First, it must apply to inter-organizational collaboration instead of community-wide, intra-organizational, or

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[12] AH Van de Ven, "On the Nature, Formation, and Maintenance of Relations among Organizations," *Academy of Management Review* 10(1976): 25.

[13] B. Gray, *Collaborating: Finding Common Ground for Multiparty Problems* (San Francisco: Jossey-Bass, 1989), 5.

[14] E Bardach, *Getting Agencies to Work Together: The Practice and Theory of Managerial Craftsmanship* (Washington, DC: Brookings Institution Press, 1998), 8. This definition is very similar to one commonly adopted by the U.S. Government: General Accountability Office, "Results-Oriented Government: Practices That Can Help Enhance and Sustain Collaboration among Federal Agencies," (Washington, DC: General Accountability Office, 2005)., 6

[15] Morton T. Hansen, *Collaboration: How Leaders Avoid the Traps, Create Unity, and Reap Big Results* (Boston: Harvard University Press, 2009), 14-15.

[16] Ibid., 15.

inter-personal collaboration.[17] Second, it should synthesize precepts from as many

theoretical perspectives as possible. Third, it must clearly articulate the essential

dimensions of collaboration. Three more precise definitions merit consideration.

Gray and Wood argue that, "collaboration occurs when a group of autonomous

stakeholders of a problem domain engage in an interactive process using shared rules,

norms, and structures, to act or decide on issues related to that domain."[18] Mattesich, et.

al. expounded further based on a review of 414 studies in 2001, arguing that,

> Collaboration is a mutually beneficial and well-defined relationship entered into
> by two or more organizations to achieve common goals. The relationship
> includes a commitment to mutual relationships and goals; a jointly developed
> structure and shared responsibility; mutual authority and accountability for
> success; and sharing of resources and rewards.[19]

Yet, perhaps Thomson, Perry, and Miller, provide the clearest description. They define

collaboration as,

> A process in which autonomous or semi-autonomous actors interact through formal and
> informal negotiation, jointly creating rules and structures governing their relationships
> and ways to act or decide on the issues that brought them together; it is a process
> involving shared norms and mutually beneficial interactions.[20]

This definition meets the criteria established by this study and highlights five key

dimensions of collaboration, which are present to varying degrees in the previous two

definitions as well: governance, administration, mutuality, norms, and organizational

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[17] For this reason, the term "collaboration" will be used here-in to refer exclusively to what the broader literature specifies as "inter-organizational collaboration."

[18] D.J. Wood and B. Gray, "Toward a Comprehensive Theory of Collaboration," *Journal of Applied Behavioral Science* 27(1991): 146.; Note that Gray defines a problem domain as "the way a problem is conceptualized by the stakeholders." Source: Gray, *Collaborating: Finding Common Ground for Multiparty Problems.*

[19] P. Mattessich, M. Murracy-Close, and B. R. Monsey, *Collaboration: What Makes It Work* Second ed. (St. Paul, MN: Amherst H. Wilder Foundation, 2001).

[20] AM Thomson, JL Perry, and TK Miller, "Conceptualizing and Measuring Collaboration," *Journal of Public Administration Research and Theory* 19, no. 1 (2007): 3.

autonomy.[21] The first two dimensions are structural: governance describes how organizations jointly establish rules to govern joint decision-making and administration enables autonomous organizations to implement shared decisions through action. The second two dimensions concern social capital: mutuality holds that organizations must realize beneficial interdependencies based on complementary or shared interests and shared norms are evidence of high degrees of trust and reciprocity. The final dimension concerns agency: policymakers must balance the tensions between organizational self-interest and the collective interest in order to support collaborative activity.

Table 2: The Dimensions of Collaboration

Collaboration Dimensions	Description
Governance	Common rules and a defined process for joint decision-making
Administration	Capacity to implement joint decisions individually or collectively
Mutuality	Recognition of shared or complementary interests
Norms	Common practices to develop trust and maintain reciprocity
Organizational autonomy	Two-way accountability between the organization and the collectivity

Source: Adapted from Thomson, 2007.

It is also helpful to determine what *does not* constitute collaboration by placing it within a broader spectrum of inter-organizational relations.[22] Cooperation and

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[21] Ibid.

[22] Beverly Cigler establishes a particularly insightful continuum of community partnerships. She distinguishes between networking partnerships characterized by loose linkages and information exchange; cooperative partnerships characterized by low levels of intensity and formality; coordinating partnerships of greater intensity with shared goals and diminished autonomy; and collaborative partnerships distinguished by a specific purpose, complex tasks, a long-term orientation, stable membership, high levels of formality, and resource commitment. Source: Beverly A. Cigler, "Pre-Conditions for the Emergence of Multicommunity Collaborative Projects," *Policy Studies Review* 16, no. 1 (1999): 88-89. Other scholars, including David Rogers,

coordination represent distinct levels of inter-organizational working relationships that

fall short of collaboration. Mattesich, et. al., suggest that cooperation is,

> characterized by informal relationships that exist without any commonly defined mission, structure, or planning effort. Information is shared as needed, and authority is retained by each organization so there is virtually no risk. Resources are separate as are rewards.[23]

> Coordination is a more formal and sustained form of inter-organizational activity.

Mattesich, et. al., argue that coordination is,

> characterized by more formal relationships and an understanding of compatible missions. Some planning and division of roles are required, and communication channels are established. Authority still rests with individual organizations, but there is some increased risk to all participants. Resources are available to participants and rewards are mutually acknowledged.[24]

> Similarly, Barbara Gray distinguishes between these two types of inter-

organizational relationships by contrasting coordination as a set of, "formal

institutionalized relationships among existing networks of organizations," relative to

Mulford and Rogers' characterization of cooperation as a series of informal trade-offs

designed to establish reciprocity in the absence of rules.[25] The table below orients the

concepts of cooperation, coordination, and collaboration to one another.

Table 3: Collaboration in Context

	Cooperation	Coordination	Collaboration
Nature of relationship	Informal	Semi-formal	Formal
Degree of	Low	Medium	High

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have attempted to develop scales to measure inter-organizational relationships in specific fields (most typically within the social service or economic development sectors): D.L. Rogers, "Towards a Scale of Interorganizational Relations among Public Agencies," *Sociology and Social Research* 59(1974).

[23] Mattessich, Murracy-Close, and Monsey, *Collaboration: What Makes It Work*

[24] Ibid.

[25] Gray, *Collaborating: Finding Common Ground for Multiparty Problems*, 15. Gray cites Mulford and Rogers' definition of cooperation available here: C.L. Mulford and D.L. Rogers, "Definitions and Models," in *Interorganizational Coordination*, ed. D.L. Rogers and D.A. Whetten (Ames: Iowa State University Press, 1982), 13.

Governance	(Attempts to establish reciprocity in absence of rules)	(Limited joint planning, division of roles, and information sharing)	(Common rules and a defined process for joint decision-making)
Administrative capacity to implement joint decisions	Low	Medium	High
Mutual recognition of shared or complementary interests	Low	Medium	High
Presence of shared norms	Low	Medium	High
Organizational autonomy	High	High	Moderately constrained
Resource flow intensity[26]	Low	Medium	High

Source: Original.

Cooperation, coordination, and collaboration occur within the context of inter-

organizational networks, which Podolny and Page define as,

> any collection of actors that pursue repeated, enduring exchange relations with one another and, at the same time, lack a legitimate organizational authority to arbitrate and resolve disputes that may arise during exchange.[27]

Benson attributes three characteristics to inter-organizational networks: they consist of

distinguishable organizations, may be linked by multiple direct ties, and/or indirectly by

"clustering or centering of linkages around one or a few mediating or controlling

organizations."[28]

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[26] Van de Ven argues that, "the defining criterion of an inter-agency relationship is the intensity of resource flows among agencies." Source: Van de Ven, "On the Nature, Formation, and Maintenance of Relations among Organizations," 33.

[27] Joel M. Podolny and Karen L. Page, "Network Forms of Organization," *Annual Review of Sociology* 24(1998): 59.

[28] K. Benson, "Inter-Organizational Network as a Political Economy," *Administrative Science Quarterly* 20(1975): 230. (Per, Thomson, "Collaboration: Meaning and Measurement".).

Within a given network, a policymaker's assessment of his or her organization's ability to establish and manage a collaborative relationship is a major factor determining an organization's proclivity to engage in cooperation, coordination, or collaboration.[29] This latent organizational characteristic constitutes "collaborative capacity," or "the ability of organizations to enter into, develop, and sustain inter-organizational systems in pursuit of collective outcomes."[30] Eugene Bardach argues that, "it is the potential to engage in collaborative activities rather than the activities themselves," that is truly important.[31] Collaborative capacity is a useful concept for other reasons as well: it is developmental and thus can increase or decrease over time, it is generalizable or can vary based on tasks, it is flexible, and it implies both quantity and quality.[32] For these reasons, this research considers *collaborative capacity* to be of more interest than *collaborative activity*. Furthermore, for the sake of consistency and clarity, this research will use the terms "collaborative opportunity" to identify as-yet unrealized collaborative endeavors and "collaborative venture" to denote realized collaborative relationships between two or more organizations.

Clearly, inter-organizational collaboration is a complex phenomenon. Organizations shape the behavior of the individuals within them and are simultaneously shaped by those very same individuals and the broader systems of which they are a part. This recognition begins to explain why no single theoretical perspective provides an

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[29] Other considerations suggested by the literature include environmental factors; transaction costs; degree of shared or complementary interest; and interpersonal/organizational trust, reputation, and reciprocity.

[30] Hocevar, Thomas, and Jansen, "Building Collaborative Capacity: An Innovative Strategy for Homeland Security Preparedness."

[31] Bardach, *Getting Agencies to Work Together: The Practice and Theory of Managerial Craftsmanship*, 20.

[32] Ibid., 21-22.

adequate basis for a general theory of collaboration.[33] It also underscores the necessity of understanding how collaboration occurs within an organization in order to inform the study of inter-organizational collaboration.

<u>Organization theory</u>

Since the beginnings of recorded civilization, humans have worked within organizations to achieve what they could not otherwise do alone. Managerial innovations including the division of labor, scientific management, mass production, and lean manufacturing, among others, have only increased the utility of organizations to modern man. Yet, the act of organizing has always presented serious challenges. Recent developments, including the transition from the industrial to the information age, increasingly complex and pervasive interdependencies, and rapid social and technological change are challenging organizations to become ever-more effective, efficient, adaptive, and agile.[34] The social sciences have attempted to address the many problems attendant to organized work through a multi-disciplinary collection of literatures encompassed by organization theory.

At its core, "organization" is, "a mechanism having the ultimate purpose of offsetting those forces that undermine human collaboration."[35] Organization theory convenes diverse disciplinary approaches ranging from psychology to sociology to

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[33] B. Gray and Donna Wood, "Collaborative Alliances: Moving from Practice to Theory," *Journal of Applied Behavioral Science* 27, no. 2 (1991): 19.
[34] F.J. Contractor and P. Lorange, "The Growth of Alliances in the Knowledge-Based Economy," *International Business Review* 11(2002).
[35] William G. Scott, "Organization Theory," in *Theories of Organization*, ed. Henry L. Tosi (Chicago: St. Huron Press, 1975), 11.

political science to biology in order to study organizations.[36] Organization theory includes a collection of theories and research focused on matters of organizational behavior, organizational design, the relationship between organizations and their environments, and collective learning.

Organizational studies emerged as a coherent field of study alongside the increasing profile of organizations in daily life at the turn of the 20th century. Its earliest thinkers founded the scientific management movement. Frederick Taylor rationalized the management of routine processes by applying the scientific method to work-flow design problems.[37] Similarly, Luther Gulick and Lyndall Urwick explored matters of organizational structure and formal authority. Gulick, in particular, was among the first to describe the fundamental tradeoffs between organization by purpose, process, person, or place, which continue to bedevil organizations in every field.[38]However, the significance of these important contributions was seriously tempered by the purely instrumental view these scholars took of the individual worker.

The human relations school rose in response to the pervasive shortcomings of scientific management. Max Weber's classic study of organization served as an intellectual bridge to a new era in organization studies concerned primarily with

[36] OE Williamson, "Chester Barnard and the Incipient Science of Organization," in *Organization Theory: From Chester Barnard to the Present and Beyond*, ed. OE Williamson (New York: Oxford University Press, 1990), 186.

[37] Frederick Winslow Taylor, *The Principles of Scientific Management* (New York: Harper, 1911).

[38] D Kettl, "Contingent Coordination: Practical and Theoretical Puzzles for Homeland Security," *The American Review of Public Administration* (2003).cites: L. Gulick, "Notes on the Theory of Organization," in *Papers on the Science of Administration*, ed. L. Gulick and L. Urwick (New York: Institute of Public Administration, 1937), 1-45.

motivational and attitudinal issues.[39] Thinkers including Chester I. Barnard recognized

that, "successful cooperation in or by formal organizations is the abnormal, not the

normal, condition," and set out to explore the authority relations, employment relations,

and informal aspects of organization that drive organizational performance.[40] This theme,

a recurring divide between the "hard" and "soft" or the concrete and the cultural aspects

of organizing, is reflected in other literatures and the theoretical framework constructed

in this study.

Modern organization theory integrates the scientific management and human

relations schools into a single, expansive view of the organization. March and Simon's

classic text, *Organizations,* assesses organizations from the bottom-up and recognizes

organizations as an imperfect solution to a range of problems, foremost among them the

individual constraints of bounded rationality.[41] Simon rejected the unrealistic and

simplifying assumptions of microeconomics in favor of a more nuanced view of decision-

making. Simon's concept of "bounded rationality" holds that the rationality of individuals

is limited by incomplete information, cognitive constraints, and decision deadlines.[42]

Bounded rationality, and the closely related phenomena of "satisficing," settling for

acceptable rather than optimal solutions in order to preserve time and effort, begin to

explain why organizational decision-making and behavior so often depart from what one

might expect.

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[39] Max Weber, "The Theory of Social and Economic Organization," in *Max Weber: The Theory of Social and Economic Organization*, ed. Talcott Parsons (New York: Oxford University Press, 1947); James G. March and Herbert A. Simon, *Organizations* (New York: John Wiley & Sons, 1958).

[40] Chester I. Barnard, "The Executive Functions," in *Organization Theory: Selected Readings*, ed. D.S. Pugh (New York: Penguin, 1938), 5.

[41] March and Simon, *Organizations*.

[42] Herbert A. Simon, "A Behavioral Model of Rational Choice," *Quarterly Journal of Economics* 69(1955).

Organizational theorists have attempted to remedy many of the pitfalls of

organizational behavior through design. Henry Mintzberg provides a useful synthesis of

the vast literature on organizational design.[43] According to Mintzberg, the two essential

tasks of organization are the division of labor (through specialization) and coordination.[44]

Mintzberg argues that there are five types of organization and that each has its requisite

strengths and preferred coordination mechanism.[45] A simple structure is feasible for

small firms and allows for coordination via direct supervision. The machine bureaucracy

coordinates through standardized work processes and is scalable. The professional

bureaucracy coordinates via standardized skills and is similarly scalable. Divisionalized

forms synchronize via standardized outputs and are a popular alternative for

multinational enterprises. Lastly, adhocracies are network style organizations

characterized by improvisational, direct coordination.

Thompson adds depth to Mintzberg's discussion of coordination by distinguishing

between three types of interdependency that require varying degrees of coordination.[46]

Pooled dependency occurs when units share common resources; sequential dependency

exists when one unit's output is another unit's input; and reciprocal interdependency

requires units to interact repeatedly in order to complete complex tasks. In effect,

Mintzberg and Thompson imply that organizational design is an inherently rational

pursuit.

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[43] H. Mintzberg, *The Structuring of Organizations: A Synthesis of the Research* (Englewood Cliffs, NJ: Prentice Hall, 1979).

[44] H. Mintzberg, *Structure in Fives: Designing Effective Organization* (Prentice Hall, 1992), 1-23.

[45] Ibid.

[46] James D. Thompson, *Organizations in Action* (New York: McGraw-Hill, 1967).

However, the organizational design of public organizations is not typically rational in the same economizing sense that private sector organizations are. Instead, public bureaucracies are typically designed through a process of political bargaining among the executive and legislative branches, interest groups, and rival bureaucratic organizations.[47] In aggregate, the literatures on private and public sector organizational design suggest that policymakers in the public sector should pair strategies, coordinating mechanisms, and corresponding structures to achieve proper "fit" or "harmony." Second, policymakers should design coordinating, reporting, and accountability measures into their structures, which preserve the faith of the relevant political patrons.

Inter-organizational Collaboration

Inter-organizational collaboration is an increasingly important dimension of the study of public, private, and nongovernmental organizations. Barbara Gray, a leading scholar in this field, explains this growing urgency noting that, "The increasing interdependence of public and private organizations and the interweaving of local, national, and global interests has reduced the capacity of any organization to act unilaterally."[48]

Inter-organizational collaboration is largely a response to environmental turbulence.[49] Emery and Trist describe turbulence as what occurs when, "large,

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[47] TM Moe, "The Politics of Structural Choice: Toward a Theory of Public Bureaucracy," in *Organizational Theory: From Chester Barnard to the Present and Beyond*, ed. OE Williamson (New York: Oxford University Press, 1990); Amy B. Zegart, *Flawed by Design: The Evolution of the CIA, JCS, and NSC* (Stanford: Stanford University Press, 1999).

[48] Gray, *Collaborating: Finding Common Ground for Multiparty Problems*, 232.

[49] Ibid; F.E. Emery and E. Trist, "The Causal Texture of Organizational Environments," *Human Relations* 18(1965); E. Trist and F.E. Emery, *Towards a Social Ecology* (New York: Plenum

competing organizations, acting independently in diverse directions, create unanticipated and dissonant consequences for themselves and others."[50] Thus, this research boom has grown apace with the increasing turbulence of organizational environments throughout the 1990s and into the 21st century.[51] Yet, its roots can be traced back further.

Over the last fifty years, three strands of empirical research have gradually merged into one. Public administration scholars became interested in collaboration among networks of social service providers as a result of President Lyndon B. Johnson's expansion of the "great society" in the 1960s.[52] They began to build a body of knowledge that was later expanded by business scholars in the late 1980s and throughout the 1990s. Early experimentation with vertical alliances among suppliers and producers gradually grew into collaborative arrangements including joint ventures, licensing agreements, loosely-coupled supply chains, and strategic alliances.[53] By the mid-to-late 1990s, widespread interest in inter-organizational collaboration had spread to the public sector as well. Today, inter-organizational collaboration is recognized as an essential aspect of good governance. Nowhere is this recognition more profound than among national and homeland security organizations.

Press, 1972); Mancur Olson, *The Logic of Collective Action* (Cambridge, MA: Harvard University Press, 1965); J. Pfeffer, *New Directions for Organization Theory* (New York: Oxford University Press, 1997).

[50] Trist and Emery, *Towards a Social Ecology*; Emery and Trist, "The Causal Texture of Organizational Environments."

[51] For example, the Project on National Security Reform documents the increasing incidence of environmental turbulence in the realm of international security since the end of the Cold War. See: "Project on National Security Reform: Turning Ideas into Action," (Washington, DC: Project on National Security Reform, 2009).

[52] Van de Ven's research is an excellent example of the contributions that this stream of empirical research makes to the broader literature on inter-organizational relations: Van de Ven, "On the Nature, Formation, and Maintenance of Relations among Organizations."

[53] Whetten notes in 1981 that the business literature focused primarily on vertical alliances. Source: David A. Whetten, "Interorganizational Relations: A Review of the Field," *The Journal of Higher Education* 52, no. 1 (1981): 2.

Inter-organizational researchers have drawn on three theoretical traditions to develop a loosely integrated body of research.[54] Much of their work has focused on power relations. Resource dependency theory, which will be discussed in greater detail later in this chapter, argues that decision-makers attempt to manage both power dependencies and environmental uncertainty through inter-organizational relations designed to preserve autonomy and stability.[55] Crucially, resource dependency holds that collaboration is the result of power asymmetries, is characterized by bargaining and conflict, and is motivated by a desire to dominate other organizations and reduce one's own vulnerability to coercion.[56] This theoretical tradition complements bureaucratic theory and helps to explain the phenomenon of power-hoarding among bureaucratic entities.

Sociology contributes a closely related theoretical approach, social exchange theory, which argues that power "resides implicitly in the other's dependency."[57] Levine and White explain that scarcity motivates exchanges, which have real consequences for an organization's ability to achieve its goals.[58] Social exchange theory, however, suggests that collaboration typically occurs when two or more organizations perceive

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[54] Schmidt and Kochan support the premise that resource dependency and exchange theory form the foundation of inter-organizational theory. Since their writing, the prominent contributions of negotiated order theorists like Barbara Gray warrant mention of their theoretical tradition as well. Sources: S. M. Schmidt and T. A. Kochan, "Interorganizational Relationships: Patterns and Motivations," *Administrative Science Quarterly* 22(1977); Gray, *Collaborating: Finding Common Ground for Multiparty Problems.*

[55] J. Pfeffer and G. R. Salancik, *The External Control of Organizations: A Resource Dependence Perspective* (Harper and Row, 1978).

[56] Schmidt and Kochan, "Interorganizational Relationships: Patterns and Motivations," 222.

[57] R. M. Emerson, "Power Dependence Relations," *American Sociological Review* 27(1962): 32.

[58] S. Levine and P. White, "Exchange as a Conceptual Framework for the Study of Interorganizational Relationships," *Administrative Science Quarterly* 5 (1961).

opportunities for mutual gain and emphasizes the relationship between inter-

organizational consensus on roles and objectives and exchange outcomes.[59]

Negotiated order theory builds on these traditions and argues that organizations

are not the rule-bound, bureaucratic entities that Max Weber described, but rather

dynamic, negotiated systems characterized by informal negotiation.[60] Negotiated order

theory explains that organizations overcome shared challenges and power asymmetries

by developing, "tacit agreements and unofficial arrangements that enable them to carry

out their work."[61] Collectively, these theories form the intellectual roots of much of the

theorizing that takes place today.

Rebecca Gajda describes modern collaboration theory as the articulation and

testing of, "the acceptable general principles and abstractions that have been generated by

observing the phenomenon of multiple individuals or entities working together to develop

a strategic alliance."[62] Chris Huxham elaborates, "collaboration theory is characterized

by a notion of synergistic gain and program enhancement from sharing resources, risks,

and rewards and the prioritizing of *collaborative* rather than *competitive* advantage"

(emphasis from original).[63]

The literature on organizations and inter-organizational collaboration agree that

shared goals and motivations, organizational attributes, organizational culture, and

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[59] Ibid., 589; Schmidt and Kochan, "Interorganizational Relationships: Patterns and Motivations," 220.

[60] R. Day and J.V. Day, "A Review of the Current State of Negotiated Order Theory: An Appreciation and a Critique," *The Sociological Quarterly* 18(1977); Gray, *Collaborating: Finding Common Ground for Multiparty Problems*.

[61] Day and Day, "A Review of the Current State of Negotiated Order Theory: An Appreciation and a Critique."

[62] Rebecca Gajda, "Utilizing Collaboration Theory to Evaluate Strategic Alliances," *American Journal of Evaluation* 25, no. 1 (2004): 67.

[63] Chris Huxham, "Creating Collaborative Advantage," ed. Chris Huxham (Thousand Oaks, CA: Sage Publications, 1996).

organizational learning affect collaborative performance. This chapter will explore major theories related to each of these considerations to distill an informative theoretical framework for the purposes of this research.

Inter-organizational Power Dynamics

Environmental factors including turbulence and inter-organizational power dynamics profoundly affect an organization's collaborative capacity. The preceding literature demonstrates that collaborative capacity is at least partially a function of "hard" organizational capacity. The ensuing discussion of resource dependency and bureaucratic theory further elaborate the inter-organizational power dynamics that affect inter-organizational collaboration. This analysis demonstrates that specific sources of bureaucratic power affect an organization's willingness and capacity to support collaboration include clear mandates in the form of authorities and political support, the funding and asset portfolio to support organizational missions, an adequate number of suitably trained staff, and a modular organizational structure capable of supporting surge operations.

Resource dependency theory

Environmental turbulence causes organizations to "become highly-interdependent with others in unexpected but consequential ways."[64] Thus, turbulent environments have three principal qualities: they are highly interdependent, dynamic, and complex.

Organizations in these environments struggle to overcome coordination and collective action problems. Policymakers cope with turbulence by resorting to

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[64] Gray, "Cross-Sectoral Partners: Collaborative Alliances among Business, Government, and Communities."

cooperative strategies, disruptive strategies to force change on a target organization,

manipulative strategies to fundamentally alter the environment, and authoritative

strategies to realign resource dependencies by mandate.[65] In recent years, policymakers

and corporate executives alike have grown increasingly interested in how cooperative

strategies can be employed even in adversarial or highly competitive environments. In

fact, "Collaboration offers an antidote to turbulence by building a collective capacity to

respond to turbulent conditions."[66]

Resource dependency theory adopts an "open system perspective" that contrasts

with earlier organizational models that viewed organizations as rational entities, which

objectively pursue goals independent of their environment.[67] Crucially, resource

dependency theory holds that collaboration is the result of power asymmetries, is

characterized by bargaining and conflict, and is motivated by a desire to dominate other

organizations and reduce one's own vulnerability to coercion.[68] This precept is consistent

with bureaucratic theory's observations regarding the propensity of bureaucratic

organizations to hoard power. Resource dependency theory argues that organizations are

constrained by their environments and interdependencies since no organization can

possibly control all of the resources necessary for its survival.[69] Resources can include

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[65] Benson, "Inter-Organizational Network as a Political Economy," 241-45.

[66] Gray, "Cross-Sectoral Partners: Collaborative Alliances among Business, Government, and Communities."

[67] Peter Tsasis, "Collaborative and Competitive Relationships within an Integrated Public Sector Network" (University of Toronto, 2004). For example, Weber's model of the bureaucratic organization did not emphasize the relationship between the organization and its environment: Weber, "The Theory of Social and Economic Organization."

[68] Schmidt and Kochan, "Interorganizational Relationships: Patterns and Motivations," 222.

[69] Pfeffer and Salanczik are generally credited with the richest description of resource dependency theory. However, many scholars described versions of resource dependency theory before it was institutionalized by Pfeffer and Salanczik in their 1978 article. Sources: Pfeffer and Salancik, *The External Control of Organizations: A Resource Dependence Perspective*. Schmidt and Kochan,

capital, infrastructure, personnel, information, technology, and legitimacy, among other

things.[70] Resource dependency theory posits that organizations strive to develop a

"negotiated order" in order to mitigate uncertainty.[71] Resource dependency is perhaps the

most fully developed theory of inter-organizational relations and thus deserves special

elaboration. Resource dependency theory is framed on the basis of five propositions:

> (1) the fundamental units for understanding intercorporate relations and society
> are organizations; ours is a society of organizations;[72]
> (2) these organizations are not autonomous, but rather are constrained by a
> network of interdependencies with other organizations;
> (3) interdependence, when coupled with uncertainty about what the actions will
> be of those with which the organization is interdependent, leads to a situation in
> which survival and continued successes are uncertain; and, therefore,
> (4) organizations take actions to manage external interdependencies, although
> such actions are inevitably never completely successful and produce new patterns
> of dependence and interdependence. Furthermore,
> (5) these patterns of dependence produce interorganizational as well as
> intraorganizaitonal power, where such power has some effect on organizational
> behavior.[73]

Resource dependency theory holds that policymakers seek to manage both power

dependencies and environmental uncertainty in order to preserve autonomy and

stability.[74] Often times, policymakers will focus these efforts on inter-organizational

relationships. For example, Guo argues that "collaborative relationships will be formed as

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"Interorganizational Relationships: Patterns and Motivations."; Rogers, "Towards a Scale of Interorganizational Relations among Public Agencies."

[70] Per, Tsasis, "Collaborative and Competitive Relationships within an Integrated Public Sector Network", 14.:H. Aldrich, *Organizations Evolving* (London: Sage, 1999); H. Aldrich, *Organizations and Environments* (Prentice-Hall., 1979); W. R. Scott, *Organizations: Rational, Natural, and Open Systems* (Englewood Cliffs, NJ: Prentice Hall, 1998).

[71] Pfeffer and Salancik, *The External Control of Organizations: A Resource Dependence Perspective*, 636.

[72] Per, Pfeffer, *New Directions for Organization Theory*, 63.:R. Presthus, *The Organizational Society*, Revised ed. (New York: St. Martin's Pres, 1978).

[73] Note: items #2-5 are derived from: Pfeffer, *New Directions for Organization Theory*, 63.

[74] J. Galaskiewicz, "Interorganizational Relations," *Annual Review of Sociology* 11(1985): 284-87; Pfeffer and Salancik, *The External Control of Organizations: A Resource Dependence Perspective*.

a managerial response to turbulent conditions in an organization's resource environment."[75]

Yet, collaboration itself can introduce new dependencies and risk to an organization's operating environment. Only by properly selecting collaborative endeavors and designing optimal governance arrangements can organizations meaningfully reduce their baseline dependency and risk profiles, as discussed in the following overview of transaction cost economics. Other strategies may include acquiring crucial resources, finding substitutes, and developing coercive power to compel other organizations to act in one's own interest.[76] Although resource dependency theory recognizes the significance of environmental constraints, it is important to recognize that it does not deny the role of strategic choice in organizational behavior.[77] Other theories, including bureaucratic politics, provide a more nuanced analysis of the environmental constraints and opportunities that affect strategic choice.

<u>Bureaucratic politics</u>

Bureaucratic politics is a method of understanding policy outcomes as institutional outputs. Contemporary bureaucratic scholars build upon a broader body of political thought first proposed by Max Weber, Frederick Taylor, and Luther Gulick. However, bureaucratic politics is theoretically distinct from other brands of institutionalism. For example, where new institutionalism is deductive, bureaucratic

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[75] Chao Guo and Muhittin Acar, "Understanding Collaboration among Nonprofit Organizations: Combining Resource Dependencey, Institutional, and Network Perspectives," *Nonprofit and Voluntary Sector Quarterly* 34, no. 3 (2005); Pfeffer and Salancik, *The External Control of Organizations: A Resource Dependence Perspective*.
[76] Wenxuan Yu, "To Collaborate or Not to Collaborate: An Exploratory Model of the Determinants of Public Adminsitrators' Attitudes toward Intersectoral Collaborations" (Rutgers University, 2007), 38-39.
[77] Aldrich, *Organizations and Environments*.

politics is inductive.[78] Similarly, where new institutionalism explains the formation and

evolution of government organizations, much of bureaucratic theory is limited to

explaining policy outcomes.[79]

Bureaucratic theory is predicated in admittedly imperfect, utility-maximizing

assumptions borrowed from the discipline of microeconomics. James Q. Wilson explains,

> Just as entrepreneurs are thought to be maximizing their 'utility,' bureaucrats are now
> thought to be maximizing theirs. The utility of a business person is assumed to be profits;
> that of a bureaucrat is assumed to be something akin to profits: salary, rank, or power.[80]

The principal insight of the literature on bureaucratic politics is that policy-

making is not a centrally controlled, unitary process but rather a horizontal process of

bargaining, coalition formation, and compromise among actors of varying strength.[81]

Bureaucratic scholars agree that bureaucracies seek to maximize and protect their

influence and preserve their own autonomy above all else.[82] Similarly, bureaucratic

actors seek to defer blame and protect their reputations from criticism and rebuke. This

phenomenon of "blame shifting" is perhaps even more pronounced at the

intergovernmental level, as will be discussed later. The literature on bureaucratic politics

can be divided into two camps: the first employs bureaucratic politics to explain foreign

policy decision-making; the second explains the behavior of bureaucratic organizations

more broadly. Both are relevant to the study of inter-organizational collaboration.

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[78] Zegart, *Flawed by Design: The Evolution of the Cia, Jcs, and Nsc*.
[79] Ibid.
[80] Wilson, *Bureaucracy*.
[81] TH Hammond, "Agenda Control, Organizational Structure, and Bureaucratic Politics," *American Journal of Political Science* 30, no. 2 (1986), 380.
[82] Wilson, *Bureaucracy*,186-192.

The literature on bureaucratic politics and policy outcomes emerged in two waves.[83] The first wave included the works of Roger Hilsman, Samuel Huntington, Richard Neustadt, and Warner Schilling. These scholars responded to rational actor models of decision-making by arguing that the way that decisions are made influences the outcome of those decisions.[84] Among second wave theorists, Graham Allison and Morton Halperin authored the most prominent studies of bureaucratic politics in the context of national security.[85] Allison supplemented the rational actor model with two additional models of organizational analysis: the organizational behavior model, which viewed policy as the output of a struggle among bureaucratic organizations, and the governmental politics model, which viewed policy as the outcome of political maneuvering among individual policymakers.[86] Halperin elaborated Allison's two models by describing the interests, participants, processes, and techniques that shape foreign policy decision-making.[87] Fundamentally, he argued that organizational and individual stands on issues are driven by the immutable desire to maintain influence.[88]

A second segment of the literature is devoted to explaining bureaucratic behavior more broadly. Scholars including James Q. Wilson elaborate how bureaucracies perceive their missions, define associated tasks, interpret constraints, and measure success.[89]

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[83] RJ Art, "Bureaucratic Politics and American Foreign Policy: A Critique," *Policy Sciences* 4, no. 4 (1973).
[84] Ibid, 468.
[85] Graham Allison and Philip Zelikow, *Essence of Decision: Explaining the Cuban Missile Crisis*, Second Edition (New York: Longman, 1999), and Morton Halperin, *Bureaucratic Politics and Foreign Policy,* (Washington, DC: The Brookings Institution, 1974).
[86] Graham Allison and Phillip Zelikow, *Essence of Decision: Explaining the Cuban Missile Crisis*, 2nd ed. (Longman, 1999).
[87] Morton Halperin, *Bureaucratic Politics and Foreign Policy* (Washington, D.C.: Brookings Institution Press, 2007).
[88] Ibid.
[89] Wilson, *Bureaucracy*.

Wilson describes five mutually incompatible challenges facing bureaucratic

organizations: accountability, equity, responsiveness, efficiency, and fiscal integrity.[90]

Bureaucratic behavior is a reflection of operators', managers', and executives'

prioritization of these competing goals and their own internecine struggles to define tasks

and shape the organizational culture or "essence."[91] Bureaucratic scholars argue that

organizational culture, the "persistent, patterned way of thinking about the central tasks

of and human relationships within an organization," is a critically important

consideration.[92] Of particular note, Amy Zegart's research in this area suggests that

national security agencies are sub-optimally designed by the executive and legislative

branches and, to make matters worse, the resulting bureaucracies are largely incapable of

adapting to evolving mission requirements.[93]

Bureaucratic politics theorists take a decidedly pessimistic view of the prospects

of interorganizational collaboration. They argue that bureaucracies exist primarily to

control and protect their autonomy and power. Far from cultivating collaboration,

bureaucracies, "enshrine all the opposing virtues of specificity, stability, predictability

and accountability."[94] Organizations lacking specific and well-defined program areas are

among the least likely to collaborate.[95] Bureaucrats will seek to match their

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[90] Ibid, 315-16.
[91] Ibid; Halperin, *Bureaucratic Politics and Foreign Policy*.
[92] Wilson, *Bureaucracy*, 91.
[93] Zegart, Amy B. *Flawed by Design: The Evolution of the CIA, JCS, and NSC.* (Stanford University Press: Stanford, 1999); Amy B. Zegart, *Spying Blind* (Princeton, NJ: Princeton University Press, 2007); Zegart, Amy. *Spying Blind.* (Princeton, Princeton University Press: 2007).
[94] Bardach, *Getting Agencies to Work Together: The Practice and Theory of Managerial Craftsmanship*, 121.
[95] M McGuire and C Silvia, "The Effect of Problem Severity, Managerial and Organizational Capacity, and Agency Structure on Intergovernmental Collaboration: Evidence from Local Emergency Management," *Public Administration Review*, no. March/April (2010).

organizations' authority and jurisdiction to its preferred understanding of its mission. In

fact, "it is a natural organizational (and human) tendency to ignore problems for which

there are currently no good solutions rather than having to admit publicly that a solution

is not yet available."[96] Wilson argues that this causes bureaucracies to:

1. Seek out tasks not being performed by others;
2. Fight organizations that seek to perform their tasks;
3. Avoid taking on tasks that differ significantly from those that are at the heart of the organization's mission;
4. Be wary of taking on joint or cooperative ventures;
5. Avoid tasks that will produce divided or hostile constituencies; and
6. Avoid learned vulnerabilities—don't do something that has caused you to get burned in the past.[97]

Unfortunately, bureaucratic theory is largely silent on the specific institutions,

governance arrangements, and processes that enhance collaboration. Instead, the strength

of the bureaucratic politics model is that it provides a rich method of explaining historical

deviations from what rational choice theorists might otherwise predict. Its weaknesses,

however, are significant. Bureaucratic politics is primarily backward looking (its

informational requirements are substantial and it offers no testable a priori propositions).

Furthermore, bureaucratic politics is not dynamic; it fails to explain how organizations

evolve. Most seriously, theories of bureaucratic politics largely preclude the possibility of

meaningful collaboration between bureaucratic organizations despite growing empirical

evidence to the contrary.

Collaborative Culture

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[96] Vicki Bier, "Hurricane Katrina as a Bureaucratic Nightmare," in *On Risk and Disaster: Lessons from Hurricane Katrina*, ed. R. Daniels, D. Kettl, and H. Kunreuther (Philadelphia: University of Pennsylvania, 2006), 245

[97] Wilson, *Bureaucracy*,186-192.

The literatures discussed thus far have focused primarily on the "harder" aspects of collaborative infrastructure including environmental considerations and power dynamics. Yet, they have also alluded to the "softer" elements of collaborative capacity including considerations such as shared interests and trust. It is useful next to focus more explicitly on the cultural dimension of collaboration. This discussion will first consider the costs and benefits of collaboration from the perspective of individual policymakers' and their organizations and then consider trust and inter-organizational steering processes to explore the cultural forces affecting collaboration in government organizations.

The Benefits of Collaboration

This research assumes that policymakers are subject to bounded rationality and will seek to maximize value for their organizations, provided that their personal interests are properly aligned with those of the organization. Thus, they will only engage in collaboration when they judge the personal and the organizational benefits to outweigh the costs and be superior to feasible alternatives (i.e. opportunity cost). What are the benefits of collaboration? How can policymakers estimate the value of a prospective collaboration, much less capture that value?

At the individual level of analysis, the particular benefits of collaboration are largely context dependent. For example, specific benefits of collaboration can include career incentives, access to new information, and an expanded scope of decision-making influence. This research recognizes that the degree to which policymakers perceive individual level benefits to collaboration influences their willingness to pursue collaborative ventures.

Table 4: The Organizational Benefits of Collaboration

The Organizational Benefits of Collaboration
1. Enhanced ability to address complex problems
2. Improved efficiency
3. Better risk management
4. Increased adaptiveness and learning
5. Greater legitimacy
6. Superior institutional innovation

At the organizational level of analysis, the principal reason that policymakers

resort to collaboration is to improve their organizations' capacity to resolve complex

problems.[98] Quite simply, certain types of "indivisible" problems defy traditional

organizational remedies.[99] These complex problems are ill-defined, affect interdependent

stakeholders who may or may not be readily identifiable, and are infused by power and

information disparities among stakeholders.[100] Organizations may be motivated to

address complex problems by an externally imposed mandate or an intrinsic desire to

pursue mutually beneficial goals through reciprocal behavior with other organizations.[101]

Complex problems often require "collaboration among stakeholders who are not

members of formally established networks."[102] Bureaucracies are poorly disposed to

manage these types of problems because they are prone to power-hoarding and rarely

conceptualize problems in their entirety and thus often fail to develop holistic

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[98] Oliver provides an excellent analysis of the motives underlying inter-organizational collaboration. She reasons that inter-organizational relations are formed for the purposes of mandated necessity, asymmetric power relations, reciprocity, efficiency, stability, and legitimacy. Source: C. Oliver, "Determinants of Interorganizational Relationships: Integration and Future Directions," *Academy of Management Review* 15, no. 2 (1990).
[99] Gray, "Conditions Facilitating Interorganizational Collaboration."
[100] Gray, *Collaborating: Finding Common Ground for Multiparty Problems*, 10.
[101] Oliver, "Determinants of Interorganizational Relationships: Integration and Future Directions."
[102] Gray, "Conditions Facilitating Interorganizational Collaboration," 932.

remedies.[103]Inter-organizational collaboration resolves this shortcoming by enabling

entities to take advantage of the differences among themselves. Paradoxically, this is also

what makes collaboration difficult to execute:

> The possibility for collaborative advantage rests in most cases on drawing synergy from the *differences* between organizations; different resources and different expertises. Yet those same differences stem from different organizational purposes and these inevitably mean that they will seek different benefits from each other out of the collaboration.[104]

By combining the distinct competencies and authorities of multiple organizations

in a collaborative arrangement, policymakers can develop a more comprehensive analysis

of the problem domain, improve the likelihood of successful collective action by

involving stakeholders in decision-making, and establish mechanisms through which

future actions might be coordinated.[105]

Second, collaboration can improve the efficiency of various organizations' efforts

to address a problem.[106] This can be achieved through the elimination of redundancies,

more comprehensive problem diagnosis, or increased specialization, among other factors.

This view is consistent with transaction cost economics theory, which suggests that

organizations collaborate in order to maximize efficiency by reducing transaction

costs.[107]

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[103] B. Gray, "Conditions Facilitating Interorganizational Collaboration," *Human Relations* 38, no. 10 (1985).

[104] M. Dacin, M. Hitt, and E. Levitas, "Selecting Partners for Successful International Alliances: Examination of U.S. And Korean Firms," *Journal of World Business* 32, no. 1 (1997): 82.

[105] Gray, *Collaborating: Finding Common Ground for Multiparty Problems*, 21.

[106] Lowndes and Skelcher, "The Dynamics of Multi-Organizational Partnerships: An Analysis of Changing Modes of Governance."

[107] OE Williamson, *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting* (New York: Free Press, 1985); Oliver E. Williamson, *Markets and Hierarchies: Analysis and Antitrust Implications* (New York: The Free Press, 1975).

Third, collaboration can help organizations to manage risk and reduce environmental uncertainty.[108] Environmental uncertainty arises from a lack of perfect knowledge about environmental change, availability of exchange partners, and the terms of exchange available to the organization.[109] This view is consistent with resource dependency theory, which suggests that organizations will collaborate when the stakes are significant and they are highly interdependent.[110] Resilient organizations view collaborative ventures both as strategic opportunities and hedges. Collaboration can provide policymakers with strategic flexibility; collaborative ventures offer options in the future that might not otherwise be available. Collaboration can also be a means of securing competitive advantage, which can include expanded access to information, greater resources, or a newfound ability to shape the competitive environment in one's favor.[111] Furthermore, collaboration can transform power dynamics through the process of coalition forming.[112]

Fourth, collaboration can be a means to enhance the capacity of an organization to adapt.[113] Organizations that learn to collaborate are skilled at managing change through continuous cycles of reassessment and readjustment. Similarly, collaboration enhances innovation and learning.[114] Eugene Bardach, in his analysis of public sector

[108] Huxham, *Managing to Collaborate: The Theory and Practice of Collaborative Advantage*.
[109] KS Cook, "Social Exchange as the Basis for Inter-Organizational Relations," *Sociological Quarterly* 18 (1977).
[110] Gray and Wood, "Collaborative Alliances: Moving from Practice to Theory."; Pfeffer and Salancik, *The External Control of Organizations: A Resource Dependence Perspective*.
[111] Bardach, *Getting Agencies to Work Together: The Practice and Theory of Managerial Craftsmanship*.
[112] Huxham, "Creating Collaborative Advantage."
[113] S Cropper, "Collaborative Working and the Issue of Sustainability," in *Creating Collaborative Advantage*, ed. C Huxham (London: Sage, 1996), 89.
[114] Lowndes and Skelcher, "The Dynamics of Multi-Organizational Partnerships: An Analysis of Changing Modes of Governance."; Huxham, *Managing to Collaborate: The Theory and Practice*

collaboration, argues that effective collaboration sustains a process of continuous

learning.[115] Other studies support the contention that learning opportunities are most

pronounced along organizational boundaries.[116]

Fifth, collaboration can increase the legitimacy of organizations among peers and

stakeholders.[117] This motive is particularly powerful among organizations operating in

fields where the relationship between inputs and outputs is difficult to measure. The

literature on new institutionalism argues that organizations adopt structures and policies

to enhance their legitimacy even if it comes at the expense of operational efficacy or

efficiency.[118] Notably, legitimate organizations and processes ensure that others retain

ownership of the solution and are predisposed to contribute to its faithful

implementation.[119] This finding is particularly important in network settings where

implementation responsibilities are distributed rather than centralized.

Finally, collaboration permits the parties most familiar with a given problem to

develop and implement innovative institutional solutions. Although negotiation and

institutional experimentation can be time-consuming and costly, these processes can be

preferable to externally imposed solutions for a variety of reasons.[120] For example, the

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of Collaborative Advantage; Heather Getha-Taylor, "Specifying and Testing a Model of Collaborative Capacity: Identifying Complementary Competencies, Incentive Structures, and Leadership Lessons for the U.S. Department of Homeland Security" (Syracuse University, 2007); Bardach, *Getting Agencies to Work Together: The Practice and Theory of Managerial Craftsmanship*; Doz and Hamel, *Alliance Advantage: The Art of Creating Value through Partnering*.

[115] Bardach, *Getting Agencies to Work Together: The Practice and Theory of Managerial Craftsmanship*.

[116] See discussion of organizational learning that follows later in this chapter.

[117] Cropper, "Collaborative Working and the Issue of Sustainability."

[118] Walter Powell and Paul J. DiMaggio, "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields," in *The New Institutionalism in Organizational Analysis*, ed. Walter Powell and Paul J. DiMaggio (Chicago: Chicago University Press, 1991).

[119] Gray, *Collaborating: Finding Common Ground for Multiparty Problems*, 21.

[120] Ibid.

organizations closest to the problem typically have more accurate and timely information, are properly motivated to monitor one another faithfully, and are immune to principal/agent problems.[121] This type of logic is enshrined in the federalist principles that bound the writ of the Federal Government of the United States.

It is critical to note, however, that these many benefits are not equally apparent at the beginning of a collaborative venture. Huxham describes many benefits of collaboration as "invisible products" and "emphasizes the value of spin-off improvements in relationships between individuals and organizations—such as shared knowledge and mutual understanding—which can follow from collaboration."[122]

Equally important, these benefits do not emerge simultaneously or consistently. Innes and Booher argue that collaboration has first, second, and third order effects.[123] First-order effects are a direct result of the collaboration process; are largely foreseeable; include specific agreements; new strategies; and social, intellectual, and political capital. Second-order effects only begin to occur after the collaboration is under way, are largely unforeseeable, and might include new partnership opportunities, joint learning, and changes in practices and perceptions. Third-order effects emerge even later, are similarly difficult to foresee, and may include new collaborative opportunities, an altered competitive landscape, new institutions, and new norms.

The Costs of Collaboration

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[121] E. Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge: Cambridge University Press, 1990), 17.

[122] Huxham, "Creating Collaborative Advantage," 177.

[123] J. E. Innes and D. E. Booher, "Consensus Building and Complex Adative Systems: A Framework for Evaluating Collaborative Planning," *Journal of the American Planning Association* 65, no. 4 (1999).

The costs of collaboration are considerably more self-evident than the benefits. For this reason, it is likely that policymakers are relatively better at anticipating costs than benefits. Huxham and MacDonald suggest four costs of collaborative action including loss of control, loss of flexibility, loss of glory, and direct resource costs emanating from engagement in collaboration.[124] These costs are particularly acute for bureaucratic organizations prone to power-hoarding. Similarly, transaction cost economics focuses on the risks of opportunism and free riding and describes the information, agency, negotiation and division, and monitoring and enforcement costs of collective action dilemmas.[125]

From the perspective of the individual policymaker, collaboration often engenders personal risk. For example, collaboration often entails a personal loss of decision-making autonomy, slower decision-making cycles, and career risk (to the extent that performance evaluation systems don't reward collaborative initiative). This research recognizes that these individual level costs and risks influence policymakers' willingness to pursue collaborative ventures.

Table 5: The Organizational Costs of Collaboration

The Organizational Costs of Collaboration
1. *Administrative costs:*   *time, resources, & personnel*
2. *Accountability*

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[124] C Huxham and David MacDonald, "Introducing Collaborative Advantage: Achieving Interorganizational Effectiveness through Meta-Strategy," *Management Decision* 30, no. 3 (1992); J. R. Schermerhorn, "Determinants of Interorganizational Cooperation," *Academy of Management Review* 18, no. 4 (1975): 849-50.

[125] Annette Steinacker, "The Institutional Colective Action Perspective on Self-Organizing Mechanisms: Market Failures and Transaction Cost Problems," in *Self-Organizing Federalism*, ed. Richard C. Feiock and John T. Scholz (Cambridge: Cambridge University Press, 2010).

3.	*Opportunity cost*
4.	*Goal diffusion*
5.	*Decision-making autonomy*

At the organizational level of analysis, costs include the direct administrative burdens of collaboration, diffusion of accountability, opportunity cost, goal diffusion as a result of competing visions and objectives among participating organizations, and a loss of organizational decision-making autonomy. It is clear then that the costs of collaboration are considerable. Eugene Bardach concludes that, "collaboration should be valued only if it produces better organizational performance or lower costs than can be had without it."[126] Similarly, Huxham and Vangen forcefully argue that,

> The overwhelming conclusion from our research is that seeking collaborative advantage is a seriously resource-consuming activity so is only to be considered when the stakes are really worth pursuing. Our message to practitioners and policy makers alike is *don't do it if you don't have to*" (emphasis from original).[127]

Yet, both of these propositions are over-stated. Bardach, despite his emphasis on the learning benefits of collaboration, does not explain how policymakers should weigh the "invisible" benefits of collaborating against the costs. Huxham and Vangen appear to summarily dismiss the possibility that the first, second, and third order benefits of collaboration will outweigh the costs of collaboration in difficult cases, but elsewhere note that,

> collaborative advantage sometimes comes in non-obvious forms and may be concerned with the process of collaborating—for example—from the development of a relationship with a partner—rather than the actual output.[128]

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[126] Bardach, *Getting Agencies to Work Together: The Practice and Theory of Managerial Craftsmanship*, 17.
[127] Huxham, *Managing to Collaborate: The Theory and Practice of Collaborative Advantage*, 13.
[128] Ibid, 80.

Within the broader literature concerning collaborative culture, there are three

bodies of research: research that identifies categories of factors related to collaborative

performance, framework research that describes somewhat more parsimoniously how the

most important factors relate to one another, and force field analysis, which arranges the

forces pushing for successful collaboration alongside those pushing against to explain

performance outcomes.

Mattessich et. al. synthesize 20 "success factors" into six categories based on their

review of 414 empirical studies.[129] Similarly, Foster and Fishman propose 25 core

competencies and processes that they consider critical to collaborative capacity.[130] Both

of these meta-studies focus on variables relating to member capacity (e.g. "mutual

respect, understanding, and trust"), relational factors (e.g. "open and frequent

communication"), and organizational capacity (e.g. "sufficient funds, staff, materials, and

time"). Whetten reviews a multi-disciplinary literature to identify five preconditions to

successful collaboration: positive attitude towards coordination, recognized need for

coordination, awareness of potential coordination partners, assessment of compatibility

and desirability, and capacity for maintaining coordination process.[131] Agranoff and

McGuire, public administration scholars, reach similar conclusions noting that shared

purpose, social capital, mutual respect, and a sense of obligation to the concerns of others

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[129] Mattessich, Murracy-Close, and Monsey, *Collaboration: What Makes It Work*
[130] P. G. Foster-Fishman et al., "Building Collaborative Capacity in Community Coalitions: A Review and Integrative Framework," *American Journal of Community Psychology* 29, no. 2 (2001).
[131] Whetten notes that these five preconditions apply to cases of voluntary collaboration (i.e. not those cases of collaboration instigated by external mandate). Thus, Whetten provides a useful distinction between preconditions for voluntary coordination and mandated coordination. Source: Whetten, "Interorganizational Relations: A Review of the Field," 15, Table 3.

are essential to hold networks together.[132] Douglas North, a new institutional historian, argues that motivation, environmental complexity, and the ability of policymakers to understand their environment affect organizations' capacity to solve coordination problems.[133] J. Kenneth Benson views inter-organizational collaboration from the perspective of political-economy and suggests that four closely related variables are critical to collaborative outcomes: agreement among agencies on the role and scope of each, ideological consensus about how agencies should approach common tasks, evaluations of the quality of work of partner agencies, and the conduct of joint activities.[134] These studies provide a useful assessment of the many factors related to collaborative capacity. Most analyses agree that shared goals and motivations, distinct organizational capacities, cultural attributes, and environmental considerations affect collaborative success.

Framework analyses build on basic factor research by distilling the more significant variables from the least. Barbara Gray argues that four factors decisively influence the success of collaboration: the context in which collaboration occurs, the design or structural form that collaboration adopts, the process of collaborative

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[132] R Agranoff and Michael McGuire, *Collaborative Public Management: New Strategies for Local Governments*, ed. Barry Rabe, American Governance and Public Policy Series (Washington, DC: Georgetown University Press, 2003). Other public administration scholars, including Googins and Rochlin, reach similar conclusions: B.K. Googins and S.A. Rochlin, "Creating the Partnership Society: Understanding the Rhetoric and Reality of Cros-Sectoral Partnership," *Business and Society Review* 105, no. 1 (2000): 133.

[133] Douglass C. North, *Institutions, Institutional Change and Economic Performance* (Cambridge: Cambridge University Press, 1990). Fiona Baxter made interesting connections between the literatures on inter-organizational collaboration theory, public administration, and new institutionalism that informed this sub-section: Fiona Margaret Baxter, "Organizational Leadership and Management in Interorganizational Partnerships: Varieties of Networking in the Era of New Governance" (North Carolina State University, 2005).

[134] Benson, "Inter-Organizational Network as a Political Economy," 247.

formation, and the mode of convening the collaborative.[135] Thomson and Perry describe

an alternative set of five key variables: governance arrangements, administrative

capacity, the balance between self-interest and the collective interest, the existence of

mutually beneficial relationships, and levels of trust and reciprocity.[136] Huxham and

Vangen adopt a different approach choosing instead to describe pairs of variables in

tension with one another.[137] For example, they recognize the tradeoff between bringing

everyone's aims into the open to improve transparency with the desire to avoid

unnecessary conflict. Significantly, they argue that collaboration requires policy-makers

to strike a dynamic balance between "soft" facilitative leadership and what they term

"collaborative thuggery" to maintain momentum.[138] Their analysis underscores the

conditional, dynamic nature of collaboration processes and illustrates the difficulties

inherent in its study.

Eugene Bardach goes a step further by elaborating the relationships among the

most important factors in inter-organizational collaboration.[139] He describes interagency

collaborative capacity as "almost an agency unto itself" with its own operating system,

overhead and control system, and decision-making system. Bardach constructs a

framework with four components: the operating system, resources contributed by

participating agencies, a steering process, and a culture of pragmatism and trust that

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[135] B. Gray, "Cross-Sectoral Partners: Collaborative Alliances among Business, Government, and Communities," in *Creating Collaborative Advantage*, ed. C Huxham (London: Sage, 1996), 58.
[136] Thomson and Perry, "Collaboration Processes: Inside the Black Box," 25-27.
[137] C Huxham, *Managing to Collaborate: The Theory and Practice of Collaborative Advantage* (New York: Rutledge, 2005), 233.
[138] Ibid.
[139] Bardach, *Getting Agencies to Work Together: The Practice and Theory of Managerial Craftsmanship*.

facilitates joint problem solving.[140] He describes the operating system as "the system that transforms physical or symbolic material into something different and, presumably, more highly valued."[141] Resources include turf, autonomy, money, people, political standing, and information.[142] Steering activities have three dimensions: quality of the chosen destination, course chosen to get there, and process and values associated with the journey.[143] Finally, the "culture of joint problem solving" describes a state of effective collaboration wherein objectives and activities are aligned among participating organizations.[144] Bardach argues that these capacities emerge through a developmental process that begins with creative opportunities and progresses to a state of improved steering capacity and continuous learning.

Force field analyses provide yet another lens through which to assess the factors that affect the outcome of collaborative ventures. The driving motives behind collaboration include common goals, adaptive purposes, formal coordination structures, sufficient authorities, social capital, technical interoperability, personnel incentives, trust, and commitment and motivation.[145] Hocevar et. al. organize these many forces into five organization design components and measure them against a countervailing set of forces that includes lack of goal clarity, narrow organizational interests, impeding rules, inadequate communication, territoriality, and lack of competency, among other things.

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[140] Ibid. 45.
[141] Ibid.115.
[142] Ibid. 164.
[143] Ibid. 200.
[144] Ibid. 245.
[145] Hocevar, Thomas, and Jansen, "Building Collaborative Capacity: An Innovative Strategy for Homeland Security Preparedness."

Many scholars seem to agree that the most significant obstacles to successful collaboration are goal divergence and mistrust.[146] This suggests that goal symmetry and the strength of trust among parties should be a major component of policymakers' evaluations of collaborative opportunities and a primary consideration in the design of institutional systems. Other barriers include tension between autonomy and accountability, time and management requirements, unclear roles and responsibilities, incompatible procedures and processes, disparate organizational cultures, historical and ideological barriers, power disparities, differing perceptions of risk, and a lack of knowledge of others' capabilities.[147]

Process models of collaboration are particularly relevant to questions about the methods that policymakers use to capture the full benefits and minimize the costs of collaboration. Ring and Van de Ven propose a cyclical, three-stage model of cooperative inter-organizational relations that includes the negotiation of joint expectations, commitments to future action, and execution of those commitments.[148] Gray and Wood organize the study of collaboration into an antecedent-process-outcome construct and propose a three-phase framework that includes problem setting, direction setting, and

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[146] Ibid; Huxham, "Creating Collaborative Advantage."; Bardach, *Getting Agencies to Work Together: The Practice and Theory of Managerial Craftsmanship.*

[147] Huxham, "Creating Collaborative Advantage."; S Hocevar, E Jansen, and GF Thomas, "Building Collaborative Capacity for Homeland Security," in *Naval Postgraduate School (Technical Report NPS-GSBPP-04-008). Monterrey, CA: Naval Postgraduate School* (2004); Hocevar, Thomas, and Jansen, "Building Collaborative Capacity: An Innovative Strategy for Homeland Security Preparedness."; Gray, *Collaborating: Finding Common Ground for Multiparty Problems.*

[148] Ring and Van de Ven's model holds that each stage of the process is assessed carefully for efficiency and equity by participating organizations. Ring and Van de Ven, "Developmental Processes of Cooperative Interorganizational Relationships," 97.

structuring.[149] Each stage includes key conditions to be achieved to facilitate

collaborative performance:[150]

Tuckman and Jensen coined a similarly popular stage model of collaboration

under the moniker "form, storm, norm, and perform."[151] Lowndes proposes another four-

stage model that is unique because it focuses primarily on the changing relationship

between organizational form and governance arrangement in each stage.[152] Perri 6 et. al.

build on these perspectives by synthesizing existing stage models into a unified model:

- **Initiation:** Each begins with some kind of initiation process involving selection and recruitment;
- **Objective negotiation:** Each recognizes a set of cognitive activities, in which aims, objectives, norms, values, worldviews, goals and objectives are worked out;
- **Design:** Each proceeds to identify one or more activities of preparation, negotiation, rule-making, structural design, conflict management;
- **Environment management:** Each recognizes that some work needs to be done outside the confines of the group to secure external resources and legitimacy and acceptance from key stakeholders;
- **Joint production:** Almost all identify some features of collaboration in the process of producing the services or goods or knowledge that is the shared task;
- **Adjustment:** Most recognize a set of activities involved in making changes in the course of the life of the group;
- **Termination:** transfer or fundamental change: Finally, many recognize a set of activities around fundamental change which might lead to termination or dissolution, or to transfer of functions elsewhere, or to very large transmogrification and rebirth in a largely new guise, either with changed members or changed activities.[153]

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[149] Gray and Wood, "Collaborative Alliances: Moving from Practice to Theory."; B. Gray, "Conditions Facilitating Interorganizational Collaboration," *Human Relations* 38 (1985).
[150] Gray and Wood, "Collaborative Alliances: Moving from Practice to Theory," 918.
[151] B. Tuckman and M. Jensen, "Stages of Small Group Development Revisited," *Group and Organizational Studies* 2 (1977).
[152] Vivien Lowndes and Chris Skelcher, "The Dynamics of Multi-Organizational Partnerships: An Analysis of Changing Modes of Governance," *Public Administration* 76 (1998).
[153] Perri 6 et al., *Managing Networks of Twenty-First Century Organizations* (New York: Palgrave Macmillan, 2006).; Perri 6 et al include the following models in their synthesis: Yves L. Doz and Gary Hamel, *Alliance Advantage: The Art of Creating Value through Partnering* (Boston: Harvard Business School Press, 1998); R Agranoff and M McGuire, "Big Questions in
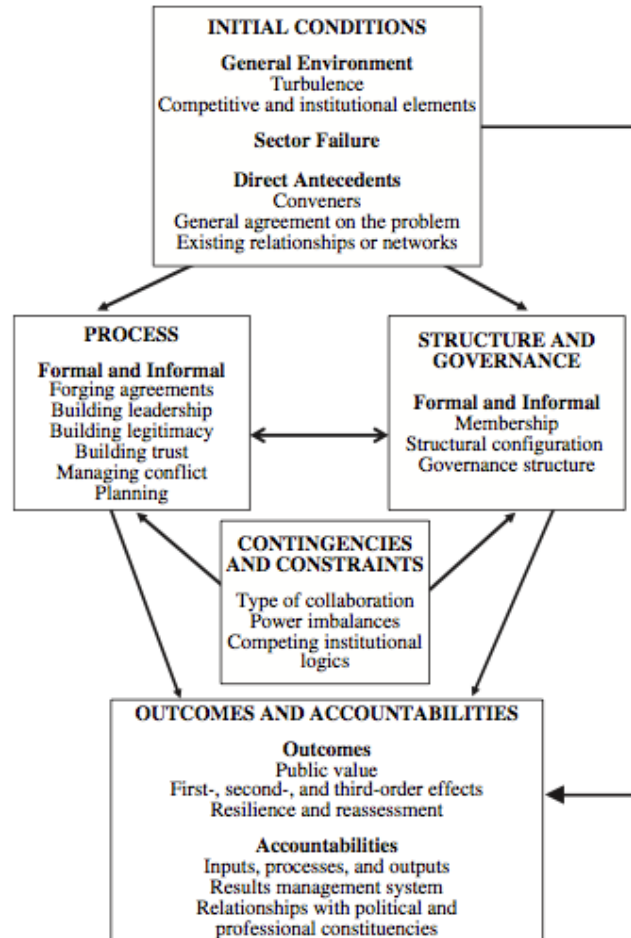
Finally, Bryson, Crosby, and Stone construct a dynamic, non-linear process model of collaboration.[154] Their model is distinct from static frameworks in the sense that it incorporates stages but allows for lateral movement (see below). This model includes preconditions and outcomes, but unlike many other models, incorporates intervening variables between initiation and outcome to begin to explain the complex process of collaboration.

Figure 1: A Dynamic Framework of Collaboration[155]

Public Network Management Research," *Journal of public administration research and theory* 11, no. 3 (2001).

[154] J Bryson and B Crosby, "The Design and Implementation of Cross-Sector Collaborations: Propositions from the Literature," *Public Administration Review* (2006).

[155] Ibid.

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                    INITIAL CONDITIONS

                   General Environment
                         Turbulence
           Competitive and institutional elements

                       Sector Failure

                   Direct Antecedents
                         Conveners
             General agreement on the problem
              Existing relationships or networks
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```
         PROCESS                    STRUCTURE AND
                                      GOVERNANCE
    Formal and Informal
      Forging agreements          Formal and Informal
      Building leadership              Membership
      Building legitimacy        Structural configuration
       Building trust            Governance structure
      Managing conflict
         Planning
```

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              CONTINGENCIES
             AND CONSTRAINTS

              Type of collaboration
               Power imbalances
             Competing institutional
                    logics
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```
         OUTCOMES AND ACCOUNTABILITIES

                      Outcomes
                     Public value
          First-, second-, and third-order effects
              Resilience and reassessment

                   Accountabilities
             Inputs, processes, and outputs
               Results management system
             Relationships with political and
                professional constituencies
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This literature on inter-organizational collaboration arises primarily from the field of public administration. Yet, many other fields contribute to our understanding of this topic. The literature on collaboration in the private sector further elaborates the infrastructure required to support inter-organizational collaboration.

Collaboration in the private sector

Although this research is focused squarely on the challenges and opportunities of collaboration and collective action among national and homeland security organizations in the public sector, it reviews research on private sector organizations as well since these actors have arguably been even more active than their public counterparts in

experimenting with collaborative institutions, governance arrangements, and processes. In fact, the top 500 global businesses maintain an average of 60 alliances each.[156] This has special significance given the increasing importance of networked alliance management among security organizations working inter-governmentally across hundreds of jurisdictions and internationally with scores of counterparts. Additionally, unlike social service collaboratives, private sector organizations wrestle with the perils of a dynamic, turbulent environment akin to that of the international security system. Of particular value, private sector organizations have grown increasingly adept at leveraging the more intangible benefits of collaboration: learning opportunities and strategic flexibility.

Yet, key differences between public and private sector organizations do warrant careful consideration, especially with respect to the survival imperative, human resources flexibility, and degrees of freedom in partner selection.[157] On balance, however, the

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[156] S Vangen and C Huxham, "Achieving Collaborative Advantage: Understanding the Challenge and Making It Happen," *Strategic Direction* (2006).; Other scholars have documented the increasing incidence of cooperative inter-organizational relations and alliance behavior, including: Ring and Van de Ven, "Developmental Processes of Cooperative Interorganizational Relationships," 90.

[157] James Q. Wilson argues that public bureaucracies are driven by constraints instead of the tasks of the organization. He notes that control over revenues, productive factors, and agency goals is vested in external organizations and describes three constraints that differentiate public and private bureaucracies: "To a much greater extent than is true of private bureaucracies, government agencies (1) cannot lawfully retain and devote to the private benefit of their members the earnings of the organization, (2) cannot allocate the factors of production in accordance with the preferences of the organization's administrators, and (3) must serve goals not of the organization's own choosing." Source: James Q. Wilson, *Bureaucracy* (Basic Books, 1989), 115.; Additionally, Perry and Rainey argue that public bureaucracies: lack the information and incentives of the economic market, are subject to greater external political and governmental scrutiny and influence, maintain a greater number of divergent goals, enjoy less autonomy as a result of formal rules, and operate in more rigid hierarchies. Source: JL Perry and HG Rainey, "The Public-Private Distinction in Organization Theory: A Critique and Research Strategy," *Academy of Management Review* 13, no. 2 (1988): 185-90.

private sector's wealth of experience provides valuable insights for public sector policy-makers.

In a sense, private sector organizations experienced the transition from the industrial to the information age earlier and more powerfully than their public sector counterparts. The number of interfirm alliances "exploded" in the 1980s.[158] The traditional vertical alliances (among suppliers, producers, distributors, and vendors) of the industrial age have been complemented by networks of horizontal alliances within and across industries.[159] Boundary-spanning collaborative ventures have become an increasingly pivotal aspect of firm competitiveness.

Increasing dynamism and environmental turbulence over recent decades has forced firms to reach past their boundaries to compete at the level of the network and the industry. Rapid technological development has linked industries in novel and unpredictable ways. Consequently, firms are constantly repositioning themselves within a shifting environment.[160] This undercurrent has caused firms to develop a spectrum of boundary-spanning organizational constructs ranging from mutual service consortia to joint ventures to value-chain partnerships to alliances and mergers.[161] The rise of low-cost computing and high bandwidth communications has increased the utility of those hybrid collaborative forms falling in the expanding space between market and

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[158] Joanne E. Oxley, "Appropriability Hazards and Governance in Strategic Alliances: A Transaction Cost Approach," *Journal of Law and Economic Organization* 13, no. 2 (1997), 388.
[159] Whetten notes that the business literature initially focused primarily on vertical alliances. Source: Whetten, "Interorganizational Relations: A Review of the Field," 2-3.
[160] Mitsuru Kodama, *Boundary Management: Developing Business Architectures for Innovation* (London: Springer, 2010), 5.
[161] Rosabeth Moss Kanter, "Collaborative Advantage: The Art of Alliances," *Harvard Business Review* (1994), 98.

hierarchy.[162] Moreover, these forms have become increasingly appealing for the purposes of providing strategic resilience in the form of options (i.e. flexibility) and organizational learning opportunities.

Morton T. Hansen, a leading researcher in this field, emphasizes the cultural dimensions of collaboration and describes disciplined collaboration as a three-step process.[163] First, managers should evaluate opportunities for collaboration by assessing the potential upside. Second, they should determine the presence of four common barriers to collaboration: not-invented-here syndrome, hoarding propensities, organizational search deficiencies, and transfer barriers that prevent people from working effectively together. Hansen counsels that managers seeking to establish collaborative ventures develop solutions to address these specific and recurring barriers.

Strategic alliances have emerged as a principal form of collaboration in the contemporary business environment. Strategic alliances are more central to a firm's strategy than a simple joint venture, tend to face more uncertainty, often involve multiple partners, and are dynamic and long-term undertakings.[164] The key advantage of the alliance form is that it is adaptive and provides "an option on the future."[165] This is also the source of its greatest difficulty: the true value of a strategic alliance is difficult to foresee.

In general terms, successful strategic alliances generate more value at lower cost than alternative courses of action. In order to be successful, a strategic alliance must be

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[162] R. Johnston and P.R. Lawrence, "Beyond Vertical Integration: The Rise of the Value-Adding Partnership," ibid.66, no. 4 (1998).

[163] Hansen, *Collaboration: How Leaders Avoid the Traps, Create Unity, and Reap Big Results*, 15-17.

[164] Doz and Hamel, *Alliance Advantage: The Art of Creating Value through Partnering*, Chapter 1.

[165] Kanter, "Collaborative Advantage: The Art of Alliances," 97.

beneficial for both partners, involve collaboration instead of mere exchange, and be managed—instead of controlled—through a web of interpersonal connections and infrastructures that promote learning.[166] Research in the private sector demonstrates that firms with more experience in alliances are relatively more successful in them.[167] They develop competencies in partner selection, governance, knowledge-sharing routines, making relationship-specific investments, and evolving a partnership over time.[168] In general, however, best practices include the prompt initiation of a specific joint activity in an alliance to secure a "quick win," an agreement to expand the relationship over time to include side-bets and new initiatives, and preservation of each partner's autonomy.[169]

In her research, Kanter identifies eight specific characteristics associated with successful relationships: individual excellence on the part of participating organizations, the relationship is related to major strategic objectives, the partners are interdependent, the firms are willing to invest in the partnership, information is shared openly, the partners integrate their organizations at many levels, the partnership is institutionalized and is not dependent only on key personalities, and the participants develop trusting, reciprocating relationships.[170]

Doz and Hamel, leading alliance researchers, describe three major categories of strategic alliances.[171] Co-option alliances turn potential competitors into allies to provide

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[166] Ibid.

[167] R. Gulati and Edward J. Zajac, "Reflections on the Study of Strategic Alliances," in *Cooperative Strategy*, ed. D. Faulkener and Mark de Rond (New York: Oxford University Press, 2000), 370.

[168] Yves L. Doz, "The Evolution of Cooperation in Strategic Alliances: Initial Conditions or Learning Processes?," *Strategic Management Journal* 17 (1996).

[169] Kanter, "Collaborative Advantage: The Art of Alliances," 103.

[170] Ibid.

[171] Doz and Hamel, *Alliance Advantage: The Art of Creating Value through Partnering*, Chapter 1.

complementary goods and services that allow a new business to develop. Co-specialization alliances bundle specialized resources from partner firms to create value synergistically. Finally, learning alliances are designed to internalize tacit knowledge and skills.

The literature on alliances offers limited guidance on the preconditions of successful alliance formation. This is largely attributable to a fundamental tension inherent in the literature: firms should be different enough to provide complementary capabilities to one another but not so different that cooperation is infeasible. The motives of alliances can include a desire to secure strategic options, improve learning opportunities, or simply to minimize transaction costs.[172] The most important aspect of partner selection concerns strategic compatibility: the degree to which the firm's relative position and strategic ambition allow for goal alignment.[173]

Yet, problems are destined to arise even when appropriate partners are selected under ideal conditions. Kanter argues that alliances progress through five phases of development: courtship, engagement, implementation challenges, accommodation, and growth.[174] Her framework suggests that problems will invariably arise in alliances and that successful alliances emerge only when challenges are addressed through joint accommodation. Alliance design can be used to avoid needless conflict and improve cooperation. Partners should carefully define operational scope, the configuration and valuation of contributions, establish governance arrangements, and design an alliance

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[172] R. N. Osborn and J. Hagedoorn, "The Institutionalization and Evolutionary Dynamics of Interorganizational Alliances and Networks," *Academy of Management Journal* 40, no. 2 (1997).

[173] Doz and Hamel, *Alliance Advantage: The Art of Creating Value through Partnering*, Chapter 4.

[174] Kanter, "Collaborative Advantage: The Art of Alliances," 99.

interface to manage operational linkages.[175] Configuration can reduce the number of

conflicts inherent in an alliance while coordination mechanisms can help to resolve the

conflicts that arise.[176] Kanter attests to the importance of alliance management, arguing

that, "Active collaboration takes place when companies develop mechanisms—structures,

processes, and skills—for bridging organizational and interpersonal differences and

achieving real value from the partnership."[177]

Finally, firms are more accurately understood as managing specific alliances

within the broader context of a network of alliances. In the business literature, an

"alliance network" is described as a set of linkages among comparable firms of a given

type; an "alliance portfolio" consists of a set of discrete bilateral alliances entered into by

a firm; finally, an "alliance web" is described as a set of alliances that are interdependent

and diverse.[178] These concepts are particularly relevant to understanding collaborative

relationship networks within the field of homeland security. In order to better understand

how some organizations overcome bureaucratic considerations to forge inter-

organizational systems to support collaboration, it is useful to turn next to organizational

learning and adaptation.

Organizational learning and adaptation

Organizational learning and adaptation is increasingly recognized as a key driver

of organizational performance. Far more than a source of competitive advantage, it is the

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[175] Doz and Hamel, *Alliance Advantage: The Art of Creating Value through Partnering*, Chapter 5.
[176] Ibid. 121.
[177] Kanter, "Collaborative Advantage: The Art of Alliances," 105.
[178] Doz and Hamel, *Alliance Advantage: The Art of Creating Value through Partnering*, 222-23.

only basis of sustainable advantage available to the organization.[179] Scholars and

policymakers broadly agree that these capabilities are essential to collaboration during

crises.[180]

Fundamentally, organizational learning is defined as "the detection and correction

of error."[181] More specifically, it is described as, "an experience-based process through

which knowledge about action-outcome relationships develops, is encoded in routines, is

embedded in organizational memory, and changes collective behavior."[182] While

individual learning is a cognitive process, organizational learning is "a complex

interpersonal process occurring through structural mechanisms in a social arena."[183]

Snyder and Cummings argue that organizational learning is distinguished by the fact that

it is, (1) done to achieve organizational ends, (2) shared among members of the

organization, and (3) learning outcomes are embedded in the organization's systems,

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[179] Walter W. Powell, Kenneth W. Koput, and Laurel Smith-Doerr, "Interorganizational Collaboration and the Locus of Innovation: Networks of Learning in Biotechnology," *Administrative Science Quarterly* 41, no. 1 (1996): 118.

[180] A.M. Howitt and Herman B. Leonard, "Adapting to Novelty," in *Managing Crises: Responding to Large-Scale Emergencies*, ed. A.M. Howitt and Herman B. Leonard (Washington, DC: CQ Press, 2009); John Harrald R, "Agility and Discipline: Critical Success Factors for Disaster Response," *ANNALS, AAPS* 604 (2006); Charles R. Wise, "Organizing for Homeland Security after Katrina: Is Adaptive Management What's Missing?," *Public Administration Review* 66, no. 2 (2006).

[181] Getha-Taylor, "Specifying and Testing a Model of Collaborative Capacity: Identifying Complementary Competencies, Incentive Structures, and Leadership Lessons for the U.S. Department of Homeland Security".Getha-Taylor cites: C. Argyris and D. A. Schon, *Theory in Practice: Increasing Professional Effectiveness* (San Francisco: Jossey-Bass, 1974); C. Argyris and D. A. Schon, *Organizational Learning: A Theory of Action Perspective* (Reading, MA: Addison-Wesley, 1978).

[182] R. Lipshitz, M. Popper, and V. J. Friedman, "A Multifacet Model of Organizational Learning," *The Journal of Applied Behavioral Science* 38, no. 1 (2002). Note: Lipshitz cites an unpublished paper by Barnett in his bibliography.

[183] Ibid. 93.

structure, and culture.[184] This is why Levitt and March describe organizational learning as "routine-based, history-dependent, and target-oriented."[185]

Organizational learning is distinguishable from organizational adaptation only in the sense that adaptation generally refers to a more rapid learning cycle (hours or days instead of years). Charles Wise describes "adaptive management" as a coping mechanism for uncertain environments wherein,

> managers must develop organizational learning capacity by employing three rational processes: risk assessment, information feedback to decision makers, and adjustment of performance based on current information.[186]

A robust ability to adapt to changing circumstances is considered to be among the most important attributes of modern organizations.[187]

Moreover, organizational learning and adaptation are intimately linked with inter-organizational collaboration. Exposure to external sources of information and knowledge, third party routines and standard operating procedures, and new mental models are fundamental to innovation.[188] In dynamic environments characterized by a complex and expanding knowledge base and dispersed expertise, the "locus of innovation" is more

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[184] Getha-Taylor, "Specifying and Testing a Model of Collaborative Capacity: Identifying Complementary Competencies, Incentive Structures, and Leadership Lessons for the U.S. Department of Homeland Security", 128-29.: Getha-Taylor cites: W. M. Snyder and T. G. Cummings, "Organizational Learning Disorders: Conceptual Model and Intervention Hypotheses," *Human Relations* 51, no. 7 (1998).

[185] Barbara Levitt and James G. March, "Organizational Learning," *Annual Review of Sociology* 14(1988), 1.

[186] Wise, "Organizing for Homeland Security after Katrina: Is Adaptive Management What's Missing?," 314.

[187] Williamson, "Chester Barnard and the Incipient Science of Organization," 174.

[188] Wesley Cohen and Daniel Levinthal, "Absorptive Capacity: A New Perspective on Learning and Innovation," *Administrative Science Quarterly* 35(1990): 128. However, it is worth noting that although networks can contribute to policy innovation, they can also inhibit implementation through high levels of uncertainty and low levels of institutionalization: Laurence J O'Toole Jr., "Implementing Public Innovations in Network Settings," *Administration & Society* 29, no. 2 (1997): 119-20.

often the network than the individual organization.[189] In both public and private sector organizations, inter-organizational collaboration is recognized as a powerful process of organizational learning.[190] Similarly, the dynamic process of collaborating requires organizations to develop robust capacities for learning and adaptation to emerging conditions.[191] Before describing the phenomenon of inter-organizational learning in more detail, it is important to describe organizational learning processes.

Organizational learning is associated with specific disciplines and processes. Senge argues that organizational learning requires five disciplines: personal mastery, mental models, shared vision, team learning, and systems thinking.[192] Garvin builds on these notions by specifying five activities associated with organizational learning: systematic problem solving, experimentation with new approaches, learning from one's own experience and past history, learning from the experiences and best practices of others, and transferring knowledge quickly and efficiently throughout the organization.[193]

Argyris and Schon distinguish between two types of learning processes. Single-loop learning involves "learning from the consequences of previous behavior."[194] This type of learning narrowly solves present problems but typically fails to address why certain problems arise in the first place.[195] Double-loop learning questions the values,

[189] Powell, Koput, and Smith-Doerr, "Interorganizational Collaboration and the Locus of Innovation: Networks of Learning in Biotechnology."

[190] Bardach, *Getting Agencies to Work Together: The Practice and Theory of Managerial Craftsmanship*; Doz and Hamel, *Alliance Advantage: The Art of Creating Value through Partnering*.

[191] Agranoff and McGuire, "Big Questions in Public Network Management Research," 303.

[192] Ibid. Agranoff cites: P. Senge, *The Fifth Discipline* (New York: Doubleday, 1990).

[193] D. A. Garvin, "Building a Learning Organization," *Harvard Business Review* 71, no. 4 (1993).

[194] Mary Jo Hatch, *Organization Theory: Modern, Symbolic, and Postmodern Perspectives* (New York: Oxford University Press, 1997), 371.

[195] Ibid. Hatch cites Argyris and Schon: Argyris and Schon, *Organizational Learning: A Theory of Action Perspective*.

policies, and assumptions that cause problems to develop in the first place and modifies behaviors accordingly.[196]

Similarly, March describes two categories of learning processes: "exploration of new possibilities" and "exploitation of old certainties."[197] Exploration includes search, variation, risk taking, experimentation, play, flexibility, discovery, and innovation. This type of learning is critical during novel crises, such as those examined in this research. Experimentation involves refinement, choice, production, efficiency, selection, implementation, and execution. March argues that organizations must maintain a proper balance between these two types of learning activities but that variation in the expected returns, the certainty and timing of those returns, and their distribution make this exceedingly difficult.[198]

The learning benefits of collaborative activity are substantial in most contexts and perhaps essential in more turbulent environments. Moreover, collaboration is a uniquely efficient method of learning from others. Inter-organizational collaboration is speedier, cheaper, and allows for up-close and sustained observation of skills and knowledge without the burdens of merger.[199] It is particularly useful for the acquisition of tacit knowledge.[200] Organizations achieve inter-organizational learning through direct

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[196] Hatch, *Organization Theory: Modern, Symbolic, and Postmodern Perspectives*, 372. Hatch cites: Argyris and Schon, *Organizational Learning: A Theory of Action Perspective*.
[197] James G. March, "Exploration and Exploitation in Organizational Learning," *Organization Science* 2 (1991).
[198] Ibid. 71.
[199] Gary Hamel, "Competition for Competence and Inter-Partner Learning within International Strategic Alliances," *Strategic Management Journal* 12 (1991), 99.
[200] David C. Mowery, Joanne E. Oxley, and Brian S. Silverman, "Strategic Alliances and Interfirm Knowledge Transfer," ibid. 17 (1996), 79.

knowledge transfer and the joint creation of new knowledge.[201] In fact, striking a balance between knowledge creation and capture is one of the central dilemmas of inter-organizational learning alliances.[202] Inter-organizational planning processes are a crucial mechanism for learning and help organizations cultivate adaptive capacities for unanticipated as well as expected events. The famous distinction between the value of *plans* and the *process* of planning is implicit recognition of planning as an interactive learning activity.

Specific structural factors can shift the locus of learning from the organization to the network. In fields where knowledge, authority, and skills are widely distributed, there is "a distinct liability to unconnectedness."[203] Thus, collaboration—both in private sector industries like pharmaceuticals and public sector disciplines including homeland security—can be a prerequisite to learning and adaptation.

Of course, inter-organizational learning can take two forms. Collaboration can promote joint skill development and/or transfer such that organizations internalize one another's competencies, or it can facilitate increased specialization through a more rational, coordinated inter-organizational division of labor (i.e. substitution).[204] Similarly, in inter-organizational learning processes, three factors take on added significance: the *intent* of each organization to internalize or substitute one another's skills and knowledge;

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[201] Rikard Larsson et al., "The Interorganizational Learning Dilemma: Collective Knowledge Development in Strategic Alliances," *Organization Science* 9, no. 3 (1998): 289.

[202] Ibid.

[203] Powell, Koput, and Smith-Doerr, "Interorganizational Collaboration and the Locus of Innovation: Networks of Learning in Biotechnology," 119.

[204] Mowery, Oxley, and Silverman, "Strategic Alliances and Interfirm Knowledge Transfer."; Gary Hamel, "Competition for Competence and Interpartner Learning within International Strategic Alliances," *Strategic Management Journal* 12(1991), 87.

transparency (the willingness of each partner to share information); and *receptivity* (the ability of each organization to internalize knowledge).[205]

Finally, at the inter-organizational level of analysis, specific barriers and enablers to learning emerge. Notable barriers include the availability of organizational absorptive capacity, the strength of each organization's intent to learn, transparency, the degree to which individuals are rewarded for benefiting partner organizations, and competitive learning dynamics.[206] More generally, enablers may include any factor that enhances receptivity and/or transparency (e.g. a history of prior interaction, trust, and the long-term orientation of the alliance).[207]

Having reviewed more traditional literatures associated with inter-organizational collaboration, it is helpful to consider research specific to emergency management and disaster response. A survey of this literature reveals that two factors are particularly important to inter-organizational collaborative performance, The first is the concept of unified command, encompassing shared situational awareness, interoperable communications, and operational coordination. The second is preparedness, which includes actions taken to prepare, organize, equip, train, and exercise for predicted and emergent contingencies.[208] The next section will explore literatures related to each of these concepts in greater detail.

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[205] Hamel, "Competition for Competence and Interpartner Learning within International Strategic Alliances," 87.
[206] Larsson et al., "The Interorganizational Learning Dilemma: Collective Knowledge Development in Strategic Alliances," 291-92.
[207] Ibid., 294-95.
[208] This definition of preparedness is derived from: "Presidential Policy Directive-8: National Preparedness," (Washington, DC: The White House, 2011).

Unified command

Emergency Management Literature

The literature on emergency management has recently adapted inter-organizational theory to inform the study of disaster response operations. This small but growing sub-field of a much broader literature on emergency management explains how organizations collaborate under the acute pressures of crises. This review will describe the context of crisis collaboration and then derive the institutional factors that affect crisis collaboration.

Howitt and Leonard describe three classes of emergencies.[209] Routine emergencies are familiar to responders and are addressed by "well-designed organizations and processes."[210] Responders identify the form of routine crisis to be addressed, associate it with the appropriate standard operating procedures, and organize and deploy equipment to execute an action plan. Crisis emergencies are distinguished from routine emergencies by an element of novelty. Crisis emergencies, like Hurricane Katrina, invalidate routine assumptions and force policymakers to struggle to understand the situation, improvise solutions, and execute an original incident action plan. Lastly, emergent crises are similar to crisis emergencies in every respect except one. Emergent crises "fester and grow, arising from more ordinary circumstances that often mask their

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[209] A.M. Howitt and Herman B. Leonard, "High Performance in Emergencies: Two Modes of Operation," in *Managing Crises: Responding to Large-Scale Emergencies*, ed. A.M. Howitt and Herman B. Leonard (Washington, DC: CQ Press, 2009)., A.M. Howitt and Herman B. Leonard, "Adapting to Novelty," in *Managing Crises: Responding to Large-Scale Emergencies*, ed. A.M. Howitt and Herman B. Leonard (Washington, DC: CQ Press, 2009).

[210] E.L. Quarantelli, "Catastrophes Are Different from Disasters: Some Implications for Crisis Planning and Managing Drawn from Katrina," Social Science Research Council, http://understandingkatrina.ssrc.org/Quarantelli/. Accessed March 2 2012.

appearance."[211] These crises, like the Deepwater Horizon incident, are difficult to recognize at first and require responders to make the challenging transition from a routine response to a crisis response in real-time.

All crises are characterized by decisional urgency, high uncertainty, and threat.[212] Yet, it is also useful to distinguish between major disasters and catastrophes. A major disaster is described by the Stafford Act as any event causing damage of sufficient severity and magnitude to warrant major disaster assistance in the judgment of the President of the United States.[213] A catastrophic incident is defined by the former National Response Plan as "any natural or manmade incident, including terrorism, that results in extraordinary levels of mass casualties, damage, or disruption" severely affecting the nation.[214] Although every catastrophe is a disaster, not every disaster rises to the level of a catastrophe. In catastrophes, organizations struggle to assess and understand the situation, information flows are degraded within and between agencies, and coordination is difficult to achieve.[215] By these measures, Hurricane Katrina constituted a crisis emergency and catastrophe and the Deepwater Horizon incident represented an emergent crisis and catastrophe.

Beyond this typology, a number of themes emerge from the literature on emergency management in the United States. First, the federalist political tradition in the United States adopts a "bottom-up" or tiered approach to emergency management, with

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[211] Howitt and Leonard, "High Performance in Emergencies: Two Modes of Operation.", 617.
[212] D Moynihan, "The Network Governance of Crisis Response: Case Studies of Incident Command Systems," *Journal of Public Administration Research and Theory* (2009)., 17
[213] *Disaster Relief and Emergency Assistance Act*, Public Law 93-288.
[214] "National Response Plan," (Department of Homeland Security, 2004), 63.
[215] Quarantelli, "Catastrophes Are Different from Disasters: Some Implications for Crisis Planning and Managing Drawn from Katrina."

notable exceptions for specific types of events.[216] Incidents are managed at the lowest

level of government possible; other levels of government only become involved when the

resources or capability of the affected jurisdictions are overwhelmed. Under most

circumstances, state government mediates the integration of state and federal assets into

disaster response operations. The subject of federalism will be discussed in detail later in

this chapter.

Second, although there is broad agreement that "collaborative networks are a

fundamental component of any emergency response," there is a vigorous debate

regarding the trade-offs between a command and control view of response and a

communication and coordination approach.[217] Although proponents of the command and

control view cite the value of hierarchical control for the purposes of integrated

execution, the principles of federalism, the "iron laws" of bureaucratic politics, and

specialization result in a communication and coordination approach to the management

of most crises in practice.[218] Furthermore, the benefits of network forms of organization,

including information gathering, learning, and adaptation attributes, are tailored to the

challenge presented by the earlier stages of crisis management, in particular.[219]

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[216] A.M. Howitt and Herman B. Leonard, "Prepared for the Worst? The Dilemmas of Crisis Management," in *Managing Crises: Responses to Large-Scale Emergencies*, ed. A.M. Howitt and Herman B. Leonard (Washington, DC: CQ Press, 2009).

[217] W.L. Waugh and Gregory Streib, "Collaboration and Leadership for Effective Emergency Management," *Public Administration Review* 66, no. 1 (2006)., 134; Moynihan, "The Network Governance of Crisis Response: Case Studies of Incident Command Systems.", 3-4; Harrald R, "Agility and Discipline: Critical Success Factors for Disaster Response," 257.

[218] Kathleen Tierney and Joseph E. Trainor, "Networks and Resilience in the World Trade Center Disaster," *Research Progress and Accomplishments* 6(2004), 163-164.

[219] Please see review of the network literature. In particular: Keith G. Provan and Patrick Kenis, "Modes of Network Governance and Implications for Network Management and Effectiveness," in *Eighth National Public Management Research Conference* (Los Angeles, CA, 2005).

Third, extreme events demand a dynamic combination of organizational discipline and adaptation, creativity, and improvisation.[220] Catastrophic scenarios pose a challenge to the capacity of policymakers to establish situational awareness through processes of emergence. Emergence refers to "social relationships and activities that are new, novel, and non-institutionalized."[221] The turbulence of post-disaster environments precludes policymakers from predicting and planning for contingency operations with a high degree of fidelity. Thus, it is necessary for policymakers to maintain situational awareness and establish an adaptive approach to incident management in order to accommodate the emergent circumstances of the disaster contingency and emergent actors within the response network.[222]Often, organizations struggle to balance the competing imperatives of discipline and adaptation.

Finally, scholars and policymakers agree that organizational and technical interoperability structures, processes, and norms are essential to crisis response broadly, and interorganizational collaboration in particular.[223] Crisis collaboration is partially a function of information management processes, norms, and technical capabilities.

Collectively, the literature on emergency management suggests that two broad considerations affect the collaborative performance of organizations responding to catastrophes: the degree to which an effective unified command can be established and preparedness. A unified command provides a forum for shared situational awareness,

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[220] Harrald R, "Agility and Discipline: Critical Success Factors for Disaster Response."; Wise, "Organizing for Homeland Security after Katrina: Is Adaptive Management What's Missing?."
[221] Tierney and Trainor, "Networks and Resilience in the World Trade Center Disaster," 164.
[222] Moynihan, "The Network Governance of Crisis Response: Case Studies of Incident Command Systems," 16.
[223] Harrald R, "Agility and Discipline: Critical Success Factors for Disaster Response."; Department of Homeland Security, "National Incident Management System," (Washington, DC, 2008).

interoperable communications, and operational coordination. Preparedness involves a range of plans, activities, processes, and relationships among responders and decisionmakers that facilitate collaborative response to anticipated and unanticipated contingencies.

Catastrophes, by definition, cross jurisdictional boundaries and require a sophisticated and sustained response from a diverse network of organizations. In this context, it is imperative that responders develop a unified command to establish common objectives, develop a strategy, and implement an incident action plan.[224] Although unified commands do not create authority-based hierarchical command relationships where none previously existed, they do provide a venue for incident commanders from autonomous organizations to collaborate and coordinate their activities. In the American system of emergency management, "A coordinated response requires the subtle weaving together of forces from a vast array of functional areas and from different levels of government, not hierarchical control."[225]

The unified command concept provides the structures and processes necessary to achieve strategic and tactical coordination short of resorting to hierarchical command and control mechanisms. The literature on unity of command is related to theories of inter-organizational collaboration, transaction cost economics, institutional collective action, and networks. The ultimate objective of the unified command concept is to achieve

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[224] "National Response Plan," 73.
[225] D Kettl, "Is the Worst yet to Come?," *The ANNALS of the American Academy of Political …* (2006).

"integrated execution" of response objectives in real-time through effective and efficient

collaboration.[226]

In order for a unified command to be effective, it must perform three functions.

First, it should promote shared situational awareness or the development of a common

operating picture. Situational awareness is both more difficult to achieve in catastrophic

scenarios and even more important to their successful resolution since the novelty of

catastrophic incidents demands extensive analysis, forecasting, and decision-making.

Situational awareness also significantly affects the capacity of organizations to recognize

when collaboration is appropriate and determine how best to carry it out.

Second, a unified command should establish and maintain interoperable

communications with units in the disaster zone. Lastly and closely related, a unified

command should achieve operational coordination through joint decision-making or

integrated command and control. In catastrophic scenarios requiring intergovernmental

coordination, the political legitimacy of emergency management policymakers becomes

increasingly important and often requires the integration of elected officials into the

decision-making process of the unified command. This is best achieved through a parallel

political coordination process that is more fully discussed later in the chapter.

Preparedness

National preparedness is conceptualized as,

> Actions taken to plan, organize, equip, train, and exercise to build and sustain the
> capabilities necessary to prevent, protect gains, mitigate the effects of, respond
> to, and recover from those threats that pose the greatest risk to the security of the
> nation.[227]

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[226] See "critical success factors: organizational integration phase: Harrald R, "Agility and
Discipline: Critical Success Factors for Disaster Response," 261-262.
[227] "Presidential Policy Directive-8: National Preparedness."

In practice, preparedness encompasses the full range of activities and investments designed to advance a jurisdiction's readiness to reduce the likelihood and consequence of adverse incidents. More importantly, preparedness constitutes an iterative process of interactions among policymakers and responders to develop shared understandings, common expectations, and robust relationships. Within the social sciences, this is often referred to as "social capital." More precisely, social capital, "stands for the ability of actors to secure benefits by virtue of membership in social networks or other social structures."[228] In the context of emergency management, social capital is primarily accrued through activities including joint planning, training, and exercise activities. This study operationalizes preparedness accordingly.

Preparedness significantly affects response and recovery outcomes and the collaborative capacity of responding organizations. The literature on inter-organizational collaboration emphasizes the importance of social capital to successful collaboration. The literature on emergency management builds on these findings and recognizes the social dividends of joint planning processes, training, and exercise activities in addition to the more direct effects of such activities. It is axiomatic within the literature that, in the words of one emergency management official, "you do not want to meet someone for the first time while you are standing around in the rubble."[229] Moreover, planning, training, and exercise activities provide policymakers with opportunities to develop common

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[228] Alejandro Portes, "Social Capital: Its Origins and Applications in Modern Sociology," *Annual Review of Sociology* 24(1998), 6.

[229] J. Walters and D. Kettl, "The Katrina Breakdown," in *On Risk and Disaster: Lessons from Hurricane Katrina*, ed. R. Daniels, D. Kettl, and H. Kunreuther (Philadelphia: University of Pennsylvania, 2006), 257.

understandings, test assumptions, develop specific skills and knowledge, and identify

shortcomings in advance of incidents.

Yet, the literature on emergency management suggests that preparedness and pre-

crisis collaboration are often neglected. Hocevar, et al. observe that although examples of

successful interagency response operations are numerous, there appears to be less

collaboration in planning, training, and exercise activities.[230] Real-world incidents,

including Hurricane Katrina, support hypotheses suggesting that pre-crisis collaboration

is under-utilized.

Thus far, this literature review has discussed factors unique to inter-organizational

collaboration. Yet, since catastrophes readily overwhelm the capabilities of state and

local governments, domestic incident management often requires intense

intergovernmental collaboration as well. This chapter will next discuss federalism and

elaborate three factors that affect intergovernmental collaboration.

Intergovernmental collaboration

Federalism

The complex and dynamic system of governance in the United States includes one

federal, 50 state, and approximately 87,000 local jurisdictions.[231] In order to understand

the forces affecting domestic incident management in the United States, it is important to

complement the insights offered by the literature on inter-organizational collaboration by

considering theories of intergovernmental relations. The literature on federalism draws on

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[230] Hocevar, Jansen, and Thomas, "Building Collaborative Capacity for Homeland Security," 1.
[231] Jr. Laurence J. O'Toole, "American Intergovernmental Relations: An Overview," in *American Intergovernmental Relations: Foundations, Perspectives, and Issues*, ed. Laurence J. O'Toole Jr. (Washington, DC: CQ Press, 2007), 3.

scholarly work in jurisprudence, political science, and public administration to "mediate federal, state, and local relationships through constitutionally grounded principles."[232] The essence of federalism is a division of political power or sovereignty between member states and a central government.[233] Feeley and Rubin define federalism as "a means of governing a polity that grants partial autonomy to geographically defined subdivisions of the polity."[234] A brief assessment of prevailing theories of federalism and their applicability to the domain of homeland security and emergency management helps to explain the dynamics of intergovernmental relations in the case studies that follow.

The distribution of sovereign powers among the federal government and the states is enumerated in the United States Constitution and elaborated in Federalist Paper Number 39.[235] Kettl argues that the central genius of the founders was that they recognized that every power boundary is permeable and left it to future generations to continuously calibrate "boundaries that promote efficiency and effectiveness without threatening accountability and responsiveness."[236] The purpose of federalism is to preserve individual rights by first "creating independent governments that would create new individual liberties, and second, by sustaining sovereign entities that could oppose the national government if it should oppress the people."[237] However, the interpretation

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[232] James Stever, "Adapting Intergovernmental Management to the New Age of Terrorism," *Administration & Society* 37, no. 4 (2005), 381.

[233] Martin Diamond, "What the Framers Meant by Federalism," in *American Intergovernmental Relations: Foundations, Perspectives, and Issues*, ed. Laurence J. O'Toole (Washington, DC: CQ Press, 2007), 44.

[234] Malcolm Feeley and Edward Rubin, *Federalism: Political Identity and Tragic Compromise* (Ann Arbor: The University of Michigan Press, 2008).

[235] James Madison, "Federalist No. 39," in *American Intergovernmental Relations: Foundations, Perspectives, and Issues*, ed. Laurence J. O'Toole Jr. (Washington, DC: CQ Press, 2007).

[236] D Kettl, "Managing Boundaries in American Administration: The Collaboration Imperative," *Public Administration Review* (2006), 12.

[237] John C. Yoo, "Sounds of Sovereignty: Defining Federalism in the 1990s," *Indiana Law Review* 27 (1999), 28.

and apportionment of powers has proven dynamic throughout American political history, subject to evolving ideologies and emergent policy problems. In fact, many contemporary commentators argue that "the American intergovernmental system was founded on ambivalent principles and built to establish arenas for conflict and controversy."[238]

Four theories of federalism project alternative interpretations of intergovernmental relations within the United States.[239] Dual federalism holds that the federal and state governments are sovereign and engaged in a relationship predisposed to tension instead of collaboration.[240] Cooperative federalism affirms that the federal and state governments maintain autonomous powers but that there is a legitimate role for the Federal Government to initiate and support national programs to be administered by state governments. This conception of federalism was famously analogized as a marble cake by Morton Grodzins in an attempt to visually underscore the overlapping and intermingling of intergovernmental powers and responsibilities.[241] Opportunistic federalism argues that each level of government exploits opportunities to expand power in relation to other levels of government on an episodic basis with little regard for long-term implications. Lastly, coercive federalism maintains that the Federal Government has usurped state powers through mechanisms including mandates to nationalize policy and programs properly reserved to the states.

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[238] Laurence J. O'Toole Jr., "American Intergovernmental Relations: An Overview," 20.
[239] Sharon L. Caudle, "Centralization and Decentralization of Policy: The National Interest of Homeland Security," *Journal of Homeland Security and Emergency Management* 8, no. 1 (2011), 2.
[240] T. Conlan, "From Cooperative to Opportunistic Federalism: Reflections on the Half-Century Anniversary of the Commission on Intergovernmental Relations," *Public Administration Review* 66, no. 5 (2006), 667.
[241] Morton Grodzins, "The Federal System," in *American Intergovernmental Relations: Foundations, Perspectives, and Issues*, ed. Laurence J. O'Toole Jr. (Washington, DC: CQ Press, 2007), 54.

No single theory of federalism is considered dominant. In fact, the nature of intergovernmental relations is variable by policy domain and subject to change over time. Different policy fields, such as education and homeland security, experience varying levels of centralization independently over time. Intergovernmental conflict is most likely to occur in those policy domains in which the federal and state government are both active.[242] Since the ratification of the Constitution, the Supreme Court has emerged as the principal arbiter of national-state relations, gradually—but unevenly—progressing towards a more expansive interpretation of federal authorities over the years.[243]

Posner argues that factors including the unification and mobilization of federal officials to advance new national goals, the unity and mobilization of state officials to protect their interests, the degree of agreement among leaders from both groups about the goals behind a proposed mandate, and the support of special interest or partisan allies for state government affect the degree to which policy centralization occurs.[244] The evolution of federalism over time is largely driven by "focusing events." Birkland defines a focusing event as an incident that is:

> Sudden, relatively rare, can be reasonably defined as harmful or revealing the possibility of potentially greater future harms, inflicts harms or suggests potential harms that are or could be concentrated on a definable geographical area or community of interest, and that is known to policymakers and the public virtually simultaneously.[245]

[242] Thomas Birkland and Sarah DeYoung, "Emergency Response, Doctrinal Confusion, and Federalism in the Deepwater Horizon Oil Spill," *Publius: The Journal of Federalism* 41, no. 3 (2011), 487.

[243] Deil S. Wright, "Models of National, State, and Local Relationships," in *American Intergovernmental Relations: Foundations, Perspectives, and Issues*, ed. Jr. Laurence J. O'Toole (Washington, DC: CQ Press, 2007), 74.

[244] Paul Posner, "Mandates: The Politics of Coercive Federalism," in *Intergovernmental Management for the 21st Century*, ed. Timothy Conlan and Paul Posner (Washington, DC: Brookings Institution 2008), 299.

[245] T. Birkland, *After Disaster: Agenda Setting, Public Policy, and Focusing Events* (Washington, DC: Georgetown University, 1997), 22.

In general, many policy fields have experienced centralization of power over the course of the last century. Traditions of dual and cooperative federalism have gradually given way to opportunistic and coercive federalism as the federal government has dramatically expanded intergovernmental grant systems, preemptions, and mandates since the 1960s.[246] Other factors, including the erosion of the power of local political parties and "bosses" over federal representatives as a result of the rise of the primary system have accelerated the aggregation of powers at the federal level.[247] Significantly, federal political activism is a bi-partisan phenomenon, driven in part by the apparent inclination of citizens to hold national, elected officials accountable for traditionally local concerns.[248]

Political science commentaries increasingly emphasize the centrality of bargaining, negotiation, coordinating, and blame-shifting in intergovernmental relations. Indeed, "…the American public administrator operates in a setting that invites local innovative management through bargaining and adjustment through negotiation."[249] Yet, as a result of the proliferation of shared intergovernmental functions and the greater revenue generating capabilities of the Federal Government, many programs are carried out under state authorities using federal resources under federal oversight.[250] However, intergovernmental power dynamics are by no means one-sided. As Morton Grodzins explains,

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[246] Conlan, "From Cooperative to Opportunistic Federalism: Reflections on the Half-Century Anniversary of the Commission on Intergovernmental Relations," 666.

[247] Paul Posner, "The Politics of Coercive Federalism in the Bush Era," *Publius: The Journal of Federalism* 37, no. 3 (2007).

[248] Ibid. 404.

[249] Robert Agranoff and Michael McGuire, "Bargaining and Negotiating in Intergovernmental Management," in *American Intergovernmental Relations: Foundations, Perspectives, and Issues*, ed. Jr. Laurence J. O'Toole (Washington, DC: CQ Press, 2007), 294.

[250] Morton Grodzins, "The Federal System," ibid., ed. Laurence J. O'Toole Jr, 55.

> "Congressmen and senators can rarely ignore concerted demands from
> their home constituencies; but no party leader can expect the same kind of
> response from those below, whether he be a president asking for
> congressional support or a congressman seeking aid from local or state
> leaders."[251]

Although federal officials are able to craft incentives to promote intergovernmental goal alignment and cooperation, the peculiarities of the American political system ensure that state and local politicians are more accountable to their constituencies than their federal counterparts. Federal officials attempt to counteract this dynamic by invoking a national security imperative to prevent the sovereign decisions of one state from generating spillover effects in other jurisdictions.[252] This strategy was used with some success to institute both Cold War era civil defense measures and the post-September 11, 2001, homeland security and counterterrorism initiatives.[253]

The political science literature generally characterizes intergovernmental relations as overlapping, highly interdependent, and dominated by horizontal and vertical bargaining.[254] As illustrated in Figure 2: The Overlapping Authority Model of American Intergovernmental Relations, this model maintains that substantial areas of governmental operations involve multiple levels of government simultaneously, areas of independent discretion are small, and the power of any single level of government is limited. Although there is debate regarding the relative power of political executives and

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[251] Ibid. 62.

[252] Issacharoff and Sharkey investigate spillover effects in the context of federalism: Samuel Issacharof and Catherine M. Sharkey, "Backdoor Federalization," *University of California at Los Angeles Law Review* 53 (2006).

[253] Stephen Collier and Andrew Lakoff, "Distributed Preparedness: The Spatial Logic of Domestic Security in the United States," *Environment and Planning: Society and Space* 26(2008), 14.

[254] Wright, "Models of National, State, and Local Relationships." 73.

legislators in these processes, there is broad consensus that intergovernmental bargaining is pivotal to contemporary governance.[255]

Figure 2: The Overlapping Authority Model of American Intergovernmental Relations[256]

National

State   Local
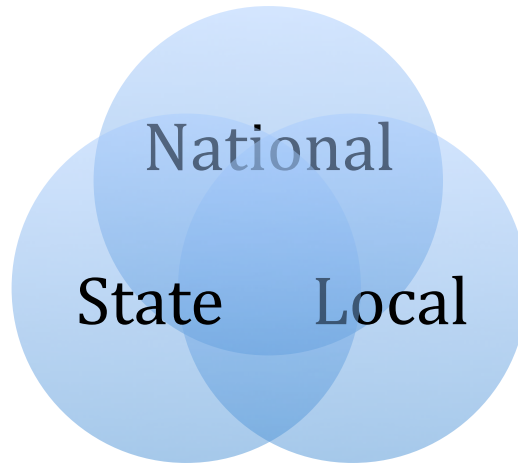
In the domain of homeland security and emergency management, centralization has emerged more recently. The Disaster Relief Act of 1974 and the Stafford Act of 1988 unambiguously preserved disaster policy to local governments and relegated federal authorities to supporting state requirements as necessary. However, three focusing events shifted this policy domain from one of cooperative federalism to opportunistic federalism over the course of the past two decades. The Exxon Valdez oil spill in 1989 resulted in the passage of the Oil Pollution Act of 1990, which delegated expanded oil spill policy and response authorities to the Federal Government. This law and its associated plans governed the response to the BP Deepwater Horizon incident and differ considerably

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[255] Frank J.Thompson, "The Rise of Executive Federalism: Implications for the Picket Fence and Igm," *The American Review of Public Administration* 43, no. 1 (2013).
[256] Adapted from Wright, "Models of National, State, and Local Relationships."

from the doctrine established by the Stafford Act. The terrorist attacks of September 11, 2001, had a similar effect on preparedness and domestic counterterrorism policy, establishing extensive new federal powers, many of which were housed in the new Department of Homeland Security. Lastly, the disappointing response of the emergency management community to Hurricane Katrina resulted in the expansion of federal involvement in domestic incident management well-beyond the prevailing preoccupation with terrorism. Shared recognition of

> many externalities, extensive interdependencies, and high stakes ultimately led the [Bush] administration and the Congress to adopt intergovernmental grants and mandates that, together, served to centralize emergency preparedness, infrastructure, and other local services.[257]

Federal law, policy, executive orders, and planning documents have contributed to the development of tense relations among federal, state, and local governments. The Federal Government prescribes policy and supports extensive homeland security programming that the states are largely responsible for executing. Local governments chafe at the requirements attached to mandates and grants-in-aid.[258] Intergovernmental relations during crises are further confounded by divergent expectations among policymakers regarding the proper role of the Federal Government in directing and supporting particular types of contingencies.[259] The concept of "emergency federalism" is described by Collier and Lakoff as "an organizational framework for coordinating local, state, and federal governments through joint planning and emergency response" during an

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[257] Ibid. 397.

[258] Kiki Caruson and Susan MacManus, "Interlocal Emergency Management Collaboration: Vertical and Horizontal Roadblocks," *Publius: The Journal of Federalism* 42, no. 1 (2011).

[259] J. Walters and D. Kettl, "The Katrina Breakdown," in *On Risk and Disaster: Lessons from Hurricane Katrina*, ed. R. Daniels, D. Kettl, and H. Kunreuther (Philadelphia: University of Pennsylvania, 2006).

actual crisis complements existing theories of federalism.[260] In practice, this framework

consists of horizontal mutual aid arrangements and vertical resource and capacity support

in the form of specialized assets and capabilities.

The literature on federalism underscores the complexity and ambiguities of

intergovernmental collaboration. Sovereign authority is distributed between the federal

and state governments and varies by policy domain and over time. Moreover, the

complementary theories of opportunistic and emergency federalism suggest that

intergovernmental relations operate differently during pre-crisis and crisis contingencies.

However, it is abundantly clear that bargaining, negotiation, coordinating, and blame-

shifting are immutable dimensions of intergovernmental collaboration.

Goal agreement

Scholarly opinion and common sense hold that shared purpose is fundamental to

all inter-organizational collaboration.[261] In fact, the significance of goal agreement is

even greater at the inter-governmental level of analysis. Whereas federal interagency

collaboration can be implemented—to varying degrees of effectiveness—by a single

sovereign authority, the same does not hold true where federal and state sovereignty

collide. Within the Federal Government, executive authority can be exercised by the

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[260] Collier and Lakoff, "Distributed Preparedness: The Spatial Logic of Domestic Security in the United States."

[261] R Agranoff and Michael McGuire, *Collaborative Public Management: New Strategies for Local Governments*, ed. Barry Rabe, American Governance and Public Policy Series (Washington, DC: Georgetown University Press, 2003). Other public administration scholars, including Googins and Rochlin, reach similar conclusions: B.K. Googins and S.A. Rochlin, "Creating the Partnership Society: Understanding the Rhetoric and Reality of Cros-Sectoral Partnership," *Business and Society Review* 105, no. 1 (2000), 133; Douglass C. North, *Institutions, Institutional Change and Economic Performance* (Cambridge: Cambridge University Press, 1990); Benson, "Inter-Organizational Network as a Political Economy," 247; Thomson and Perry, "Collaboration Processes: Inside the Black Box," 25-27; Hocevar, Thomas, and Jansen, "Building Collaborative Capacity: An Innovative Strategy for Homeland Security Preparedness."

President of the United States and his/her delegates to define common goals and priorities.[262] However, the governors of disaster-affected states cannot be compelled to establish common goals or direct state or local authorities to pursue federal priorities. For this reason, the development of shared goals is an essential element of inter-governmental collaboration.

It is helpful to evaluate three discrete dimensions of goal agreement. The foundation of goal agreement is shared problem definition. Policymakers define problems according to the information available to them (i.e. situational awareness), bureaucratic mandate, and the disposition of senior leadership. This is one of the primary reasons that the development of a common operating picture is so pivotal to collaborative performance. Second, policymakers must develop a consensus regarding common or, at least, complementary goals. Third, policymakers must develop agreement concerning the proper methods of pursuing shared goals. These three dimensions of goal agreement are additive. Inter-organizational and inter-governmental collaboration is possible with only shared problem definition, but collaborative performance is likely to improve with consensus regarding goals and methods. This research will evaluate goal agreement using this conceptual framework.

Figure 3: Goal agreement framework

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[262] The strengths and weaknesses of various methods of presidential delegation of authority to cabinet officers, so-called policy "czars," and other officials named in statute (e.g. Federal Coordinating Officers for Stafford Act disasters), is discussed in countless publications, including: "Project on National Security Reform: Forging a New Shield," (Washington, DC, 2008).

Methods
agreement

Goal
consensus

Shared problem
definition
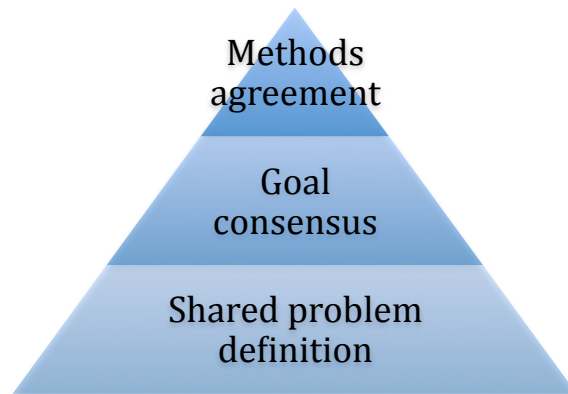
The task of cultivating intergovernmental goal agreement often exceeds the capacity of the best-intentioned professional leaders. In these cases, policymakers must develop and implement a political coordination process to integrate political power-brokers into decision-making cycles.

Political coordination process

The unified command, as an element of the National Incident Management System (discussed in detail in the next chapter), "functions best when it is directed at a well-defined, reasonably consistent, or clearly prioritized set of purposes."[263] When goals are unclear or when controversial trade-offs must be made, increasing degrees of political and moral authority become necessary to legitimize decision-making. The literatures on bureaucratic politics and federalism inform thinking on political coordination in disaster response operations. Decades of experience suggest that when elected officials are not included in the decision-making process or are in open disagreement with operational decision-making, the public tends to question the legitimacy and efficacy of response operations. Equally important, political discord can severely hamper the efforts of

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[263] A.M. Howitt and Herman B. Leonard, "Beyond Katrina: Improving Disaster Response Capabilities," in *Crisis/Response Journal* (Cambridge, MA: Center for Public Leadership, 2006), 22.

operational commanders to forge consensus and collaborate. Thus, political considerations not only affect the narrative surrounding disaster response operations, they directly impact their efficacy. Scholars and policymakers alike argue that existing coordination structures often fail to achieve the political coordination necessary to supplement the unified command in catastrophic response contingencies.[264] The field of institutional collective action provides crucial insight regarding how policymakers can progress from shared goals to collective action through institutional design and deliberation.

Institutional collective action

The study of collective action, a prominent strand of new institutionalism in the field of political science, is particularly relevant to the study of inter-organizational collaboration. Mancur Olson studied "collective goods," which are distinguished from private goods in the sense that they cannot be withheld from any member of a collectivity once they have been provided to another member of the group.[265] He further described collective action as "any action, which provides a public good."[266] Olson vanquished the popular misconception that shared interests equate with cooperative strategies arguing instead that, "rational, self-interested individuals will not act to achieve their common or group interests."[267] In fact, collective action entails a host of vexing problems that include free riding, commitment challenges, issues of institutional supply, and monitoring

[264] See, for example: Juliette Kayyem, "The Game Changer: One Year Ago Today, Politics Collided with Disaster," *The Boston Globe*, April 24, 2011 2011; Howitt and Leonard, "Beyond Katrina: Improving Disaster Response Capabilities."
[265] Pamela E. Oliver, "Formal Models of Collective Action," *Annual Review of Sociology* 19(1993), 273.
[266] Olson, *The Logic of Collective Action*.
[267] Ibid. 2.

difficulties.[268] Decades, later, Olson's arguments have given rise to a body of research that its proponents describe as "*the* central subject of political science" (emphasis from original).[269]

Today, Elinor Ostrom is a principal architect of this field of study. She and many others have studied collective action problems related to common goods in localities and sectors across the globe. More specifically, Ostrom studies the myriad heuristics, norms, and rules that boundedly rational individuals develop to overcome collective action problems.[270] Ostrom argues that resource users are capable of overcoming common dilemmas to cooperate through communication, innovation, and experimentation. Her research assigns central importance to norms of reciprocity, reputation, and trust in determining the levels of cooperation that can be achieved by a given collective.[271] Ostrom explains how individuals routinely engage in complicated efforts to design rules, institutions, and processes to improve shared outcomes. Intriguingly, she argues that self-regulated solutions are typically superior to externally imposed, centrally directed regimes because they avoid principal-agent problems, benefit from more accurate and timely information, and facilitate efficient self-monitoring and enforcement.[272]

Ostrom calibrates her analysis of institutions at three hierarchical levels: operational choice rules affecting daily decisions, collective-choice rules, which are used to develop operational choice rules, and constitutional rules, which shape collective-

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[268] Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*, 27.
[269] E. Ostrom, "A Behavioral Approach to the Rational Choice Theory of Collective Action," *American Political Science Review* 92, no. 1 (1998): 1.
[270] Ibid. 9.
[271] Ibid. 12-13.
[272] Among other advantages, Ostrom notes that self-regulation allows for more timely and accurate information analysis, lower enforcement costs, and the avoidance of principal/agent problems. See: Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*, 17.

choice rules.[273] Each level of analysis is nested within another that is increasingly

impervious to institutional change. She evaluates the evolution of institutions at these

three levels by measuring summary variables including estimated benefits, costs, shared

norms, and opportunities resultant of institutional change.[274] Ostrom overcomes the

difficulties of estimating summary variables by identifying the situational variables (e.g.

number of appropriators, amount and type of conflict, etc.) that shape the values of

specific summary variables.[275] In so doing, she articulates design principles that

characterize the most successful collective action institutions and develops a

comprehensive framework of analysis that has come to define the field.

More recently, public administration theorists have begun to apply similar

analytic techniques to the collective action problems faced by organizations. Scholars

Richard C. Feiock and John T. Scholz describe organizational collective action problems

as occasions when "institutions acting together can potentially achieve outcomes that are

preferred to the best outcomes that institutions could achieve acting individually."[276]

They propose an institutional collective action framework that focuses on the barriers to

coordinated action and employs transaction cost analysis to determine the information

costs, negotiation costs, and enforcement costs that inhibit collaboration under specific

governance arrangements.[277] Feiock and Scholz evaluate a spectrum of mitigating

mechanisms—ranging from complete autonomy to informal policy networks to councils

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[273] Ibid. 50-52.
[274] Ibid.
[275] Ibid. 194.
[276] Richard C. Feiock and John T. Scholz, eds., *Self-Organizing Federalism: Collaborative Mechanisms to Mitigate Institutional Collective Action Dilemmas* (Cambridge: Cambridge University Press,2010), 8-9.
[277] Ibid. 11.

of government to consolidated central government.[278]

The collective action literature demonstrates that inter-organizational collective action problems can be overcome through experimentation with novel institutions. Equally important, Ostrom suggests that although collective action "is never a unitary phenomenon,"[279] it is possible to derive the institutional design principles that distinguish the most successful cases.[280] Of course, institutional design is only one element of successful intergovernmental collaboration. Effective execution requires the establishment of a common understanding among relevant policymakers of each organization's respective roles and responsibilities.

For the purposes of disaster management, political coordination processes should perform three major functions. First, they should support efficient resource brokering among jurisdictions. Second, they should provide conflict resolution mechanisms to resolve disputes before they adversely affect operational outcomes.

Common understanding of roles and responsibilities

The existence of a common understanding of intergovernmental and inter-organizational roles and responsibilities can facilitate or fatally undermine collective action initiatives. In the discipline of emergency management, this type of understanding is enshrined in statute, policy, plans, doctrine, organizing, training, and exercises. More importantly, this understanding is developed and socialized through preparedness *processes* including joint planning, training, and exercising. The literature on public

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[278] Ibid. 16.

[279] Oliver, "Formal Models of Collective Action," 275.

[280] Ostrom did precisely this in her study of the most enduring collectivities, institutional change, and institutional failures. See: Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*, 55.

sector network theory and New Institutional Economics provides useful insight regarding the challenges of engaging in networked collaborative operations.

Public sector networks

Network theory is uniquely useful for understanding how patterns of relationships between an organization and its environment translate into power, opportunity, and strategic flexibility. In fact, there are a number of reasons to suggest that network concepts are increasingly relevant to national security organizations. First, the increasing incidence of complex problems requires the formation of agile networks to address them.[281] Second, preferences for limited government, fiscal constraints, and the decreasing significance of traditional boundaries (e.g. foreign vs. domestic) are accelerating the diffusion of public-private networks.[282] Third, rapid change and unpredictability favor the network form over other organizational forms.[283]

Network theory argues that networks provide the opportunities and constraints that shape organizational behavior and outcomes.[284] It recognizes that although policymakers and organizations have agency, they cannot exercise it fully, and develops propositions to explain how actors interact within a given environment.[285] Like organization theory, however, the network literature is less a unified theory than a

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[281] Laurence J. O'Toole Jr., "Treating Networks Seriously: Practical and Research- Based Agendas in Public Administration," *Public Administration Review* 57, no. 1 (1997): 46-47.
[282] Ibid.
[283] R. E. Miles and C. C. Snow, "Causes of Failure in Network Organizations," *California Management Review* 34, no. 4 (1992).
[284] D Brass et al., "Taking Stock of Networks and Organizations: A Multilevel Perspective," *The Academy of Management Journal* 47, no. 6 (2004), 795.
[285] R. Karl Rethemeyer and Deneen M. Hatmaker, "Network Management Reconsidered: An Inquiry into Management of Network Structures in Public Sector Service Provision," *Journal of Public Administration Research and Theory* 18 (2007), 631.

collection of concepts and hypotheses. In large part, this diversity is explained by conflicting definitions of what constitutes a network.

At one end of the spectrum, Brass et. al. define networks as "a set of nodes and the set of ties representing some relationship, or lack of relationship, between the nodes."[286] According to this expansive definition, even the hierarchical ties within a single organization constitute a network. Perri 6 et al suggest a more thorough but similarly inclusive definition, describing networks as,

> any moderately stable pattern of ties or links between organizations or between organizations and individuals, where those ties represent some form of recognizable accountability, whether formal or informal in character, whether weak or strong, loose or tight, bounded or unbounded.[287]

For them, accountability relations are what distinguish the network form. Podolny and Page offer a more discriminating definition that highlights the unique governance attributes of networks. They define networks as,

> any collection of actors that pursue repeated, enduring exchange relations with one another and, at the same time, lack a legitimate organizational authority to arbitrate and resolve disputes that may arise during exchange.[288]

O'Toole offers a similar definition and argues that the limited structural stability exhibited by networks is explained by formal and informal authority bonds, exchange relations, and coalitions based on common interest.[289]

Network research is principally derived from the sociological tradition, but has become increasingly popular within political science and public management.[290] This multi-disciplinary literature suggests that networks do three things:

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[286] Brass et al., "Taking Stock of Networks and Organizations: A Multilevel Perspective," 795.
[287] 6 et al., *Managing Networks of Twenty-First Century Organizations*, 5.
[288] Podolny and Page, "Network Forms of Organization," 59.
[289] O'Toole, "Treating Networks Seriously: Practical and Research- Based Agendas in Public Administration," 45.

(1) they transfer information that gives rise to attitude similarity, imitation, and generation of innovations;
(2) they mediate transactions among organizations and cooperation among persons; and
(3) they give differential access to resources and power.[291]

Network theory also draws heavily from resource dependency theory. Where resource dependency theory argues that, "organizations must exchange with one another because none possesses every resource needed to sustain operations achieve their goals," network theory elaborates how these exchanges are mediated.[292] For example, Rethemeyer and Hatmaker distinguish between two types of resources that can be transformed into influence in network settings. Material-institutional resources are "the set of financial, political, human, informational, and institutional things and conditions that organizations can deploy" in support of a preferred outcome.[293] Social structural resources are the "persistent pattern of communication and resource exchange between three or more 'actors.'"[294] The distribution and development of these resources within a network helps to determine power dynamics and shape the behavior of the network. Yet, there are actually many different types of networks, each with its own unique characteristics.

Public administration scholars study three distinct types of networks.[295] Policy networks include interest groups, corporations, nonprofits, and for-profits that attempt to influence public resource decisions. Collaborative networks include a similar spectrum of

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[290] FS Berry et al., "Three Traditions of Network Research: What the Public Management Research Agenda Can Learn from Other Research Communities," ibid. 64, no. 5 (2004).
[291] Brass et al., "Taking Stock of Networks and Organizations: A Multilevel Perspective," 807.
[292] Rethemeyer and Hatmaker, "Network Management Reconsidered: An Inquiry into Management of Network Structures in Public Sector Service Provision," 634-36.
[293] Ibid., 634.
[294] Ibid., 635.
[295] Kimberley R. Issett et al., "Networks in Public Administration Scholarship: Understanding Where We Are and Where We Need to Go," *Public Administration Research and Theory* 21(2011). Rethemeyer and Hatmaker, "Network Management Reconsidered: An Inquiry into Management of Network Structures in Public Sector Service Provision."

organizations but are devoted exclusively to providing goods and services that a single public agency is unable to provide on its own. Governance networks are effectively a hybrid of policy networks and collaborative networks in that they "fuse collaborative public goods and service provision with collective policymaking."[296]

The particular type of network appropriate for a specific circumstance is determined by actor characteristics (e.g. resources and capabilities) and objectives.[297] Provan and Milward describe four types of public sector networks differentiated by purpose: service implementation networks, information diffusion networks, problem solving networks, and community capacity building networks.[298] Their research suggests that organizations operating in dynamic, unpredictable environments must rely on emergent problem solving networks, which depend heavily on expertise, pre-existing relationships, coordinating capacity, and leadership.

Networks are generally recognized as an organizational alternative to markets or hierarchies. The effectiveness of a given organizational form varies with conditions, but each offers unique strengths and weaknesses. Walter Powell recognizes that markets offer participants superior choice, flexibility, and opportunity.[299] However, he argues that they are poorly suited to facilitating the exchange of complex, idiosyncratic value, are similarly ill suited to transferring tacit knowledge, and are vulnerable to opportunistic behavior. Hierarchies are far better at managing the risks of opportunism, ensuring the

[296] Issett et al., "Networks in Public Administration Scholarship: Understanding Where We Are and Where We Need to Go," 158.

[297] Brass et al., "Taking Stock of Networks and Organizations: A Multilevel Perspective," 807-08.

[298] H. Brinton Milward and Keith Provan, "A Manager's Guide to Choosing and Using Collaborative Networks," (IBM Center for the Business of Government, 2006), 11.

[299] Walter Powell, "Neither Market nor Hierarchy: Network Forms of Organization," *Research in Organizational Behavior* (1990), 301.

reliable performance of high-volume tasks, and maintaining clear lines of accountability. However, hierarchies struggle to cope with unanticipated change or novel tasks.

Comparatively, networks are "lighter on their feet," and are ideal for circumstances wherein efficient and reliable information is needed, speed is critical, and trust is imperative.[300] Networks enable firms to share benefits and burdens and exploit complementarities without incurring the costs of hierarchical integration.[301] The principal drawback of networks is their instability.[302] Similarly, they are vulnerable to failure via over-extension.[303] Provan and Milward argue that networks also require distinct managerial competencies including a capacity to manage accountability, legitimacy, conflict, network governance design, and commitment across boundaries.[304]

Despite these drawbacks, networks are uniquely appealing in dynamic environments for their prompt feedback loops and unrivaled capacity for self-renewal: the fact that essential relationships are external and based on voluntarism can actually be considered a strength in this context.[305] In turbulent environments, the benefits of hierarchy—coordination, economies of scale, and risk reduction—now look more like weaknesses in the form of structural inertia, slow response times, and decreased employee satisfaction.[306]

Networks are studied at three different levels of analysis. In general, findings at one level of analysis are applicable to each of the others. The sociological tradition

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[300] Ibid., 295.
[301] Podolny and Page, "Network Forms of Organization."
[302] Milward and Provan, "A Manager'S Guide to Choosing and Using Collaborative Networks," 12.
[303] Miles and Snow, "Causes of Failure in Network Organizations."
[304] Milward and Provan, "A Manager'S Guide to Choosing and Using Collaborative Networks," 19.
[305] Miles and Snow, "Causes of Failure in Network Organizations."
[306] Powell, "Neither Market nor Hierarchy: Network Forms of Organization," 319.

initiated the study of interpersonal networks. Key findings include the notion that actor similarity ("homophily") promotes communication and social integration; organizational structure, workflows, and proximity shape networks; one's position in a network can be a source of power; and actors occupying similar positions in a network (i.e. "structural equivalence") influence one another despite a lack of direct contact.[307]

Inter-unit level analysis focuses on the formal and informal ties that exist between units of a single organization. This literature suggests that organizations can be linked by interpersonal ties or functional organization ties.[308] Furthermore, there is a dynamic interplay between formal and informal ties. Ibarra argues that, "the action potential of organizational systems is highly contingent on the degree of overlap or alignment between prescribed and emergent networks."[309] Many network studies suggest that actor centrality is typically associated with better performance and favorable rates of innovation.[310] Finally, network scholars, beginning with Granovetter, conclude that strong ties promote the transfer of tacit knowledge while weak ties and "structural holes" provide better access to raw information and lucrative brokerage opportunities.[311]

The inter-organizational level of analysis suggests that networks form to acquire resources, reduce uncertainty, enhance legitimacy, and attain collective goals.[312] The antecedents of inter-organizational networks include one or more of these motives, a

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[307] Brass et al., "Taking Stock of Networks and Organizations: A Multilevel Perspective," 796-800.

[308] Ibid., 801-02.

[309] Herminia Ibarra, "Structural Alignments, Individual Strategies, and Managerial Action: Elements toward a Network Theory of Getting Things Done," in *Networks and Organizations: Structure, Form, and Action*, ed. N. Nohria and Robert G. Eccles (Boston: Harvard Business School Press, 1992), 171.

[310] Brass et al., "Taking Stock of Networks and Organizations: A Multilevel Perspective," 801-02.

[311] M. Granovetter, "The Strength of Weak Ties," *American Journal of Sociology* 78(1973); R. Burt, *Structural Holes: The Social Structure of Comptetition* (Belknap Press, 1995).

[312] Galaskiewicz, "Interorganizational Relations."

learning orientation, trust or prior ties, and institutions that articulate concrete norms and

provide for monitoring and enforcement.[313] Notably, the literature suggests that

governance arrangements can produce positive or negative externalities for members and

outsiders, and that both increasing network centrality and experience collaborating are

associated with superior performance.[314] Brass et al concludes that, "Inter-organizational

networks offer a variety of knowledge, innovation, performance, and survival benefits,

but the issues of competition, information control, and trust in partners make the problem

of building effective networks highly complex."[315] Of course, the principal drawback of

the network form is the emergence of transaction costs that can undermine collaboration

among nominally autonomous organizations. In order to better understand and address

this dynamic, it is helpful to turn to New Institutional Economics.

New Institutional Economics

The New Institutional Economics is founded on the dual premises that institutions

matter and that they are susceptible to economic analysis.[316] New Institutional

Economics studies organizations, contracts, and institutions as coordinating devices.[317]

However, New Institutional Economics "is fundamentally about actors who enter into

exchanges with one another: they bargain, they haggle, they design structural solutions to

their mutual problems."[318] Thus, New Institutional Economics , and transaction cost

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[313] Brass et al., "Taking Stock of Networks and Organizations: A Multilevel Perspective," 802-04.
[314] Ibid. 806-07.
[315] Ibid. 807.
[316] OE Williamson, "The New Institutional Economics: Taking Stock, Looking Ahead," *Journal of economic literature* 38, no. 3 (2000), 595.
[317] Eric Brousseau and Jean-Michel Glachant, "A Road Map for the Guidebook," in *New Institutional Economics: A Guidebook*, ed. Eric Brousseau and Jean-Michel Glachant (New York: Cambridge University Press, 2008), xli.
[318] Moe, "The Politics of Structural Choice: Toward a Theory of Public Bureaucracy," 128.

economics in particular, provide an essential perspective on the challenge of inter-

organizational collaboration.

Oliver Williamson built on the pioneering work of Ronald Coase to develop a

transaction-based theory of economic organization.[319] Coase constructed a theory of the

firm around the observation that economic transactions are not "frictionless" but are

instead a source of significant organizational concern.[320] Williamson elaborated on this

crucial insight and argued,

> Transaction costs are economized by assigning transactions (which differ in their
> attributes) to governance structures (the adaptive capacities and associated costs
> of which differ) in a discriminating way.[321]

Transaction cost economics is based on two basic assumptions about individual

behavior. First, individuals are boundedly-rational and, second, they are inherently

opportunistic.[322] Williamson famously describes opportunism as "self-interest with

guile."[323] Transaction cost economics views the organizational environment as an

uncertain, complex place, dominated by small numbers bargaining predicaments and

information asymmetries.[324] In this context, transactions are imbued with three important

attributes: asset specificity, frequency, and uncertainty.[325]Firms face distinct risks based

on the characteristics of each transaction and attempt to deal with them through

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[319] R. H. Coase, "The Nature of the Firm," *Economica* 4(1937); Williamson, *Markets and Hierarchies: Analysis and Antitrust Implications*; Williamson, *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting*.
[320] Coase, "The Nature of the Firm."
[321] Williamson, *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting*, 18.
[322] Ibid. 30.
[323] Ibid.
[324] Williamson, *Markets and Hierarchies: Analysis and Antitrust Implications*.
[325] OE Williamson, "Transaction Cost Economics and Public Administration," in *Public Priority Setting: Rules and Costs*, ed. P.B. Boorsma et al (Amsterdam: Kluwer Academic Publishers, 1997), 31.

governance solutions. In transaction cost economics, governance is defined as "the means by which order is accomplished in a relation in which potential conflict threatens to undo or upset opportunities to realize mutual gains," and includes a range of possibilities spanning from market to hybrid to hierarchical forms.[326] Governance arrangements vary in three important ways as well: incentive intensity, administrative controls, and the legal rules regime.[327] As the significance of various contracting hazards accumulates, the benefits of hierarchical governance arrangements begin to outweigh their costs. Moreover, markets foster autonomous adaptation while hierarchies facilitate cooperative adaptation.[328]

Additionally, transaction cost economics describes two types of transaction costs.[329] The first, ex ante costs, include search and contracting: drafting, negotiating, and safeguarding an agreement. The second, ex post costs, encompass monitoring and enforcement and include: discrepancies between results and expectations, haggling, establishing and sustaining governance systems, and enforcement activities. Transaction cost economics is predominantly focused on controlling these latter costs through governance arrangements. In fact, "The general rubric out of which transaction cost economics works is that of hazard mitigation through ex post governance."[330] In this sense, transaction cost economics is more comprehensive than theories such as agency theory, which "emphasizes ex ante incentive alignment and efficient risk bearing, rather

[326] Ibid. 23.
[327] OE Williamson, "Strategy Research: Governance and Competence Perspectives," *Strategic Management Journal* 20, no. 12 (1999), 1090.
[328] OE Williamson, "Public and Private Bureaucracies: A Transaction Cost Economics Perspective," *The Journal of Law, Economics, & Organization* 15, no. 1 (1999), 338-39.
[329] Williamson, *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting*, 20-21.
[330] Williamson, "Public and Private Bureaucracies: A Transaction Cost Economics Perspective," 321.

than ex post governance."[331] This makes transaction cost economics particularly suitable

for the study of collaboration since collaborative ventures include extensive ex post

engagement with high degrees of uncertainty.

Lastly, although transaction cost economics was originally conceived to analyze

private sector firms, it is also applicable to the public sector. Williamson argues that,

"any issue that arises as or can be posed as a contracting problem can be examined to

advantage in transaction cost economizing terms."[332] Although there are important

differences between the public and private sector, transaction cost economics views

public bureaucracies as yet another mode of governance with its own associated strengths

and weaknesses.[333] In fact, "high transaction cost issues 'gravitate' to the polity because

public bureaucracy, for some transactions, is the best feasible response."[334]Significantly,

Williamson suggests that public sector analyses employ the "remediableness criterion,"

which holds, "…that an extant mode of organization for which no superior feasible

alternative can be described and implemented with expected net gains is presumed to be

efficient."[335]In sum, transaction cost economics argues that the degree to which an inter-

organizational system reduces transaction costs will affect collaborative behavior among

the organizations within the system.

For the purposes of this research, two dimensions of common understanding of

roles and responsibilities are particularly significant. The first is intergovernmental

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[331] Williamson, "The New Institutional Economics: Taking Stock, Looking Ahead," 600.
[332] Williamson, "Transaction Cost Economics and Public Administration," 31.
[333] For example, see: Moe, "The Politics of Structural Choice: Toward a Theory of Public Bureaucracy."; Williamson, "Public and Private Bureaucracies: A Transaction Cost Economics Perspective," 308-09.; ibid., 307.
[334] Williamson, "Public and Private Bureaucracies: A Transaction Cost Economics Perspective," 310.
[335] Ibid. 316.

knowledge of each organization's approximate capabilities and capacity. The second

element involves a common recognition of roles and responsibilities. Both of these

dimensions are evidenced in the existence of joint planning documents, exercises, and

operational performance during actual crises.

Selected factors affecting inter-organizational and intergovernmental collaboration

This literature review developed a theoretical framework to support the

structured, comparative analysis of inter-organizational and inter-governmental

collaboration during catastrophic crises. This section describes summary variables

affecting inter-organizational and intergovernmental collaboration, which are general

indicators influenced by a larger number of situational variables.[336]

Inter-organizational collaboration
Inter-organizational Power Dynamics

The literature on inter-organizational collaboration, resource dependency theory,

and bureaucratic politics affirm that environmental considerations including turbulence

and power dynamics affect collaborative performance. Organizations respond to

environmental turbulence by pursuing collaborative ventures.[337] However, power-

hoarding inclinations and aversion to the risks of dependency, incomplete control, loss of

prestige, and diminution of organizational sources of power profoundly inhibit

collaborative performance.

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[336] Scholars, including Elinor Ostrom, define summary and situational variables to facilitate analysis of complex phenomena. See, for example: Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*, 17.

[337] Interestingly, the literature does not propose a clear relationship between the inter-organizational distribution of power and collaborative performance.

In short, collaborative performance is likely to be greater if the involved organizations maintain the organizational power necessary to support collaboration and collaboration does not imperil the organizations' sources of power. In the context of crisis collaboration, existing theory suggests that specific sources of bureaucratic power affect an organization's willingness and capacity to support collaboration include clear mandates in the form of authorities and political support, the funding and asset portfolio to support organizational missions, an adequate number of suitably trained staff, and a modular organizational structure capable of supporting surge operations.

Collaborative Culture

The literature on inter-organizational collaboration and collaboration in the private sector proposes a variety of cultural attributes associated with robust collaborative capacity. Scholars emphasize the centrality of trust, reputation, and reciprocity, shared goals, and joint decision-making processes. Other factors, including perceptions of the costs and benefits of collaboration, the existence of conflict resolution mechanisms, transparency, and individual personnel incentive structures also affect an organization's collaborative capacity.

Organizational Learning and Adaptation

Organizational learning is distinguished by the fact that it is, (1) done to achieve organizational ends, (2) shared among members of the organization, and (3) learning outcomes are embedded in the organization's systems, structure, and culture.[338] Organizational learning is distinguishable from organizational adaptation only in the

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[338] Getha-Taylor, "Specifying and Testing a Model of Collaborative Capacity: Identifying Complementary Competencies, Incentive Structures, and Leadership Lessons for the U.S. Department of Homeland Security", 128-29.: Getha-Taylor cites: W. M. Snyder and T. G. Cummings, "Organizational Learning Disorders: Conceptual Model and Intervention Hypotheses," *Human Relations* 51, no. 7 (1998).

sense that adaptation generally refers to a more rapid learning cycle (hours or days instead of years). Moreover, organizational learning and adaptation are intimately linked with inter-organizational collaboration. Exposure to external sources of information and knowledge, third party routines and standard operating procedures, and new mental models are fundamental to innovation.[339]

This review underscores the difference between organizational learning between incidents and exercises and adaptation during dynamic operations. It demonstrates that organizational learning between incidents and exercises provides policymakers with an invaluable opportunity to limit the need for costly adaptation *during* incident response operations through pre-event institutionalization of lessons learned. Although the need for adaptation to emergent circumstances can never be eliminated, it can be mitigated through deliberate organizational learning. The inverse aspects of the relationship between organizational learning and adaptation are generally under-appreciated and warrant further study.

Unified command

The unified command concept provides the structures and processes necessary to achieve strategic and tactical coordination short of resorting to hierarchical command and control mechanisms. In order for a unified command to be effective, it must perform three functions. First, it should promote shared situational awareness or the development of a common operating picture. Situational awareness is both more difficult to achieve in

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[339] Wesley Cohen and Daniel Levinthal, "Absorptive Capacity: A New Perspective on Learning and Innovation," *Administrative Science Quarterly* 35(1990): 128. However, it is worth noting that although networks can contribute to policy innovation, they can also inhibit implementation through high levels of uncertainty and low levels of institutionalization: Laurence J O'Toole Jr., "Implementing Public Innovations in Network Settings," *Administration & Society* 29, no. 2 (1997): 119-20.

catastrophic scenarios and even more important to their successful resolution since the novelty of catastrophic incidents demands extensive analysis, forecasting, and decision-making. Situational awareness also significantly affects the capacity of organizations to recognize when collaboration is appropriate and determine how best to carry it out.

Second, a unified command should establish and maintain interoperable communications with units in the disaster zone. Lastly and closely related, a unified command should achieve operational coordination through joint decision-making or integrated command and control. In catastrophic scenarios requiring intergovernmental coordination, the political legitimacy of emergency management policymakers becomes increasingly important and often requires the integration of elected officials into the decision-making process of the unified command.

Preparedness

Preparedness encompasses the full range of activities and investments designed to advance a jurisdiction's readiness to reduce the likelihood and consequence of adverse incidents. More importantly, preparedness constitutes an iterative process of interactions among policymakers and responders that develops shared understandings, common expectations, and robust relationships. Within the social sciences, this is often referred to as "social capital." More precisely, social capital, "stands for the ability of actors to secure benefits by virtue of membership in social networks or other social structures."[340] In the context of emergency management, social capital is primarily accrued through activities including joint planning, training, and exercise activities. This study operationalizes preparedness accordingly.

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[340] Portes, "Social Capital: Its Origins and Applications in Modern Sociology," 6.

Figure 4: Inter-organizational collaboration theoretical framework

Inter-organizational Collaboration	
Summary Variable	*Contributing factors*
Inter-organizational power dynamics	Authorities/shared goals
	Political support
	Funding and assets
	Suitably trained staff
	Surge capacity
Collaborative culture	Perceptions of costs/benefits of collaboration
	Trust, reputation, reciprocity
	Leadership
	Joint decision-making processes
	Conflict resolution mechanisms
	Personnel incentive structures
Organizational learning & adaptation	Organizational learning capacity
	Adaptive capacity
Unified command	Shared situational awareness
	Interoperable communications
	Operational coordination
Preparedness	Joint planning
	Training
	Exercises

Intergovernmental Collaboration

Goal agreement

As intergovernmental collaboration involves more than one sovereign authority, goal agreement is even more important and laborious a task for intergovernmental operations than it is for interagency operations. Whereas federal interagency collaboration can notionally be implemented by a single sovereign authority, the same does not hold true where federal and state sovereignty intersect.

It is helpful to evaluate three discrete dimensions of goal agreement. The foundation of goal agreement is a shared problem definition. Policymakers define problems according to the information available to them (i.e. situational awareness), bureaucratic mandate, and the disposition of senior leadership. This is one of the primary

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reasons that the development of a common operating picture is so pivotal to collaborative performance. Second, policymakers must develop a consensus regarding common or, at least, complementary goals. Third, policymakers must develop agreement concerning the proper methods of pursuing shared goals. These three dimensions of goal agreement are additive. Inter-organizational and intergovernmental collaboration is possible with only shared problem definition, but collaborative performance is likely to improve with consensus regarding goals and methods. This research will evaluate goal agreement using this conceptual framework.

Common understanding of roles and responsibilities

The literatures of inter-organizational collaboration, networks, and transaction cost economics detail the benefits of a common understanding of roles and responsibilities to intergovernmental collaboration. The literature on public administration networks explains how independent and semi-independent organizations organize the joint provision of goods and services and transaction cost economics suggests that network efficacy can be improved through the mitigation of transaction costs. Institutions, such as plans, shared organizational methods, and other norms, reduce the ex ante and ex post costs of establishing and sustaining collaborative endeavors.

Political coordination process

When goals are unclear or when controversial trade-offs must be made, increasing degrees of political and moral authority become necessary to legitimize decision-making. The literatures on bureaucratic politics and federalism inform thinking on political coordination in disaster response operations. Experience proves that political discord can severely hamper the efforts of operational commanders to forge consensus and

collaborate. Thus, political considerations not only affect the narrative surrounding disaster response operations, they directly impact their efficacy. Scholars and policymakers alike argue that existing coordination structures often fail to achieve the political coordination necessary to supplement the unified command in catastrophic response contingencies.[341]

The field of institutional collective action provides crucial insight regarding how policymakers can progress from shared goals to collective action through institutional design and deliberation. The literature on collective action details a host of vexing problems that include free riding, commitment challenges, issues of institutional supply, and monitoring difficulties.[342] Actors are only able to overcome these common dilemmas to cooperate through communication, innovation, and experimentation. Leading research assigns central importance to norms of reciprocity, reputation, and trust in determining the levels of cooperation that can be achieved by a given collective.[343]

For the purposes of disaster management, political coordination processes should perform two major functions. First, they should support efficient resource brokering among jurisdictions. Second, they should provide conflict resolution mechanisms to resolve disputes before they adversely affect operational outcomes.

Figure 5: Intergovernmental collaboration theoretical framework

Intergovernmental Collaboration	
Summary Variables	*Contributing Factors*
Goal agreement	Shared problem definition
	Common ends

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[341] See, for example: Juliette Kayyem, "The Game Changer: One Year Ago Today, Politics Collided with Disaster," *The Boston Globe*, April 24, 2011 2011; Howitt and Leonard, "Beyond Katrina: Improving Disaster Response Capabilities."

[342] Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*, 27.

[343] Ibid. 12-13.

	Common methods
Common understanding of roles & responsibilities	Governmental & organizational roles understood
	Existence of norms reducing transaction costs
Political coordination process	Resource brokering
	Conflict resolution

Methods

This study seeks to explain why homeland security organizations experience varying levels of collaborative performance during crises. The objectives of this project are to elaborate the inter-organizational and intergovernmental factors associated with high-performance crisis collaboration.

This research employs an inductive qualitative research methodology to examine the complex phenomena of inter-organizational collaboration. The qualitative approach permits critical investigation of complex processes and interactive effects and allows for the thorough description, analysis, and evaluation of variables that are not susceptible to measurement by traditional quantitative techniques.

This research design features two crisis case studies. The two cases track the collaborative performance of one or more federal agencies with homeland security responsibilities prior to and during two selected crises. This design offers a variety of benefits. First, it allows for the comparative analysis of two agencies responding to the same crisis at a single point in time. Second, the study allows for comparative analysis of learning and change over time within the selected agency by tracking the performance of the same agency in a second crisis. Third, it offers a unique opportunity to contrast the bottom-up design of the National Response Plan governing the Hurricane Katrina response with the top-down design of the National Contingency Plan employed in the

Deepwater Horizon crisis. Fourth, this design permits a rigorous analysis of the relationship between pre-crisis preparedness activities and crisis collaboration.

Case selection

Case selection was based on two sets of criteria. Event selection criteria determine which homeland security crises provide the greatest analytic leverage and agency selection criteria determine which federal agencies will be examined in each of the two events. Events were selected first for the novelty and scope of the disaster and availability of detailed operational information. Complex crises require greater levels of collaboration and thus offer richer opportunities for research. Second, the events were selected such that as many independent variables as possible could be held constant in order to isolate a more focused set of key variables for study. Specifically, this research studied two events in the same region featuring as many of the same partner organizations and leaders as possible. Third, recent events were preferred over more distant historical events in order to maximize the policy relevance of the study's findings. These criteria led to the selection of the Hurricane Katrina catastrophe of 2005 and the Deepwater Horizon catastrophe of 2010.

Agency selection

The agencies featured in the Hurricane Katrina and Deepwater Horizon case studies were selected according to a second set of criteria. First, in order to facilitate comparative analysis, this research considered only federal agencies with preparedness and response responsibilities, a history of response operations requiring minimal or no-notice operations, and extensive interagency and intergovernmental partnership activity. Agencies were also selected according to the availability of information and access to

personnel. These criteria led to the selection of the U.S. Coast Guard (Coast Guard) and the Federal Emergency Management Agency (FEMA). Although these organizations are unique in many respects, they are quite comparable in many others. Most notably, both organizations execute a broad spectrum of missions requiring extensive collaboration, have limited operational capacity, are subject to a similar organizational context within DHS, and collaborate with similar organizations within the same federalist system.

Mission-area selection

In order to focus the case studies, this analysis focuses on a single mission area responsibility each for the Coast Guard and FEMA related to their responses to each case. This analysis selects one mission area per agency in order to examine specific collaborative networks, construct a more coherent narrative, and produce sharper analysis. Mission areas were selected based on their centrality to Coast Guard and FEMA operational success in the Katrina and Deepwater Horizon responses and the availability of information.

During Hurricane Katrina response operations, the Coast Guard was particularly active in three of its assigned mission areas: search and rescue, marine environmental protection, and management of maritime commerce.[344] This analysis will examine Coast Guard collaborative performance related to search and rescue.

The Coast Guard is designated as the lead agency in the Federal Government for maritime search and rescue and is responsible for coordinating the efforts of Coast Guard units with other federal, state, and local responders.[345] The National Response Plan

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[344] "Coast Guard: Observations on the Preparation, Response, and Recovery Missions Related to Hurricane Katrina," (Government Accountability Office, 2006).
[345] "U.S. Coast Guard: America's Maritime Guardian," (Washington, DC: United States Coast Guard, 2009), 7

designates the Coast Guard as a supporting agency responsible for assisting FEMA's

Urban Search and Rescue Teams in the wake of disasters. This case does not examine

other Coast Guard missions related to Hurricane Katrina, such as marine environmental

protection and management of maritime commerce.

The Hurricane Katrina case study examines FEMA's emergency management

responsibilities as they relate to Hurricane Katrina. According to the National Response

Plan, FEMA is responsible for "supporting overall activities of the Federal Government

for domestic incident management."[346] Practically, this means that FEMA is responsible

for coordinating information flow among responding entities, providing support services

to state and local agencies, translating state needs into mission assignments and

delegating them to federal departments and agencies, and coordinating operations in the

field. This case does not examine other FEMA missions related to Hurricane Katrina such

as mass care, housing, and human services; long term community recovery and

mitigation; and others.

During Deepwater Horizon response operations, the Coast Guard was particularly

active in three of its assigned mission areas: search and rescue, marine environmental

protection, and management of maritime commerce.[347] This analysis will examine Coast

Guard collaborative performance related to marine environmental protection.

The Coast Guard is designated as the lead agency in the Federal Government for marine

environmental protection. Marine environmental protection includes averting the

introduction of invasive species, stopping unauthorized ocean dumping, and managing

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[346] "National Response Plan.", Emergency Support Function Annex, page 5-1.
[347] "Coast Guard: Observations on the Preparation, Response, and Recovery Missions Related to Hurricane Katrina."

offshore hazardous material releases.[348] The Oil Pollution Act of 1990 designates the Coast Guard as the lead agency responsible for executing the National Contingency Plan for offshore oil spills. Under this plan, the Coast Guard co-chairs the National Response Team alongside the Environmental Protection Agency. The Coast Guard is responsible for coordinating the efforts of Coast Guard units with other federal, state, and local responders and the party responsible for the hazardous materials release. This case does not examine other Coast Guard missions related to Deepwater Horizon, such as search and rescue and the management of maritime commerce.

Case Development

Historical event reconstruction and process tracing techniques were used to develop the case studies. Data collection was driven by the preceding theory review, which identified two categories of relevant variables. Each case study will feature a brief overview of the scope of the disaster, a discussion of how the collaborative response should have unfolded according to policy and plans, and a historical reconstruction of the progression of the crisis.

The second chapter of each case study systematically examines crisis collaboration using the theoretical framework developed in this chapter to investigate how inter-organizational and intergovernmental variables interact to determine collaborative capacity. This research concludes with an analysis of the macro-level conclusions supported by this research. It specifies both theoretical and policy-relevant findings and describes how these contributions should inform theory and policy related to crisis collaboration.

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[348] "Annual Review of the United States Coast Guard's Mission Performance," (Washington, DC: Office of Inspector General, Department of Homeland Security, 2011), 20.

Chapter 3: Hurricane Katrina

"Too often, because everybody was in charge, nobody was in charge."
   - *A Failure of Initiative,* House Select Bipartisan Committee to Investigate the
         Preparation for and Response to Hurricane Katrina[349]

      This case study describes the Hurricane Katrina catastrophe and the role of FEMA

and the Coast Guard in responding to it. It begins with an overview of the scope and scale

of the catastrophe; examines plans and policies in place to facilitate an emergent,

networked response; and then recounts how the response unfolded in actuality. The

chapter concludes with a comparative analysis of the discrepancies between expectations

of collaborative performance and the observed realities.

      Chapter four applies the theoretical framework developed in chapter two to

evaluate why the observed collaborative outcomes occurred. Chapter four systematically

analyzes how specific inter-organizational and intergovernmental factors affected the

efforts of FEMA and the Coast Guard to collaborate during the crisis.

Disaster Overview

"The devastation along the Gulf Coast from Hurricane Katrina is like nothing I have
witnessed before. It is catastrophic. Words cannot convey the physical destruction and
personal suffering in that part of the nation."[350]
                          Dr. Max Mayfield
   Director, National Hurricane Center

      The eye of Hurricane Katrina crashed into the Louisiana coast at 6:10am CT on

Monday, August, 29, 2005.[351] At landfall, Katrina was a 460-mile wide Category 3

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[349] House Select Bipartisan Committee to Investigate the Preparation for and Response to
Hurricane Katrina, *A Failure of Initiative*, 109th Congress, 2nd Session, 2006, v.
[350] Ibid. 28

hurricane with sustained winds of 125mph.[352] Over the course of the next 12 hours,

Katrina caused unprecedented destruction across 90,000 square miles of the Gulf Coast

and wrought an estimated $100-150 billion in economic damage.[353] Tragically, Katrina

also reversed a decades long trend of declining mortality in natural disasters and resulted

in 1,577 deaths, more than any natural disaster since 1928.[354]

Figure 6: U.S. Natural Disasters that caused the most death and damage to property in each decade, 1900-2005 (in 2005 dollars)[355]

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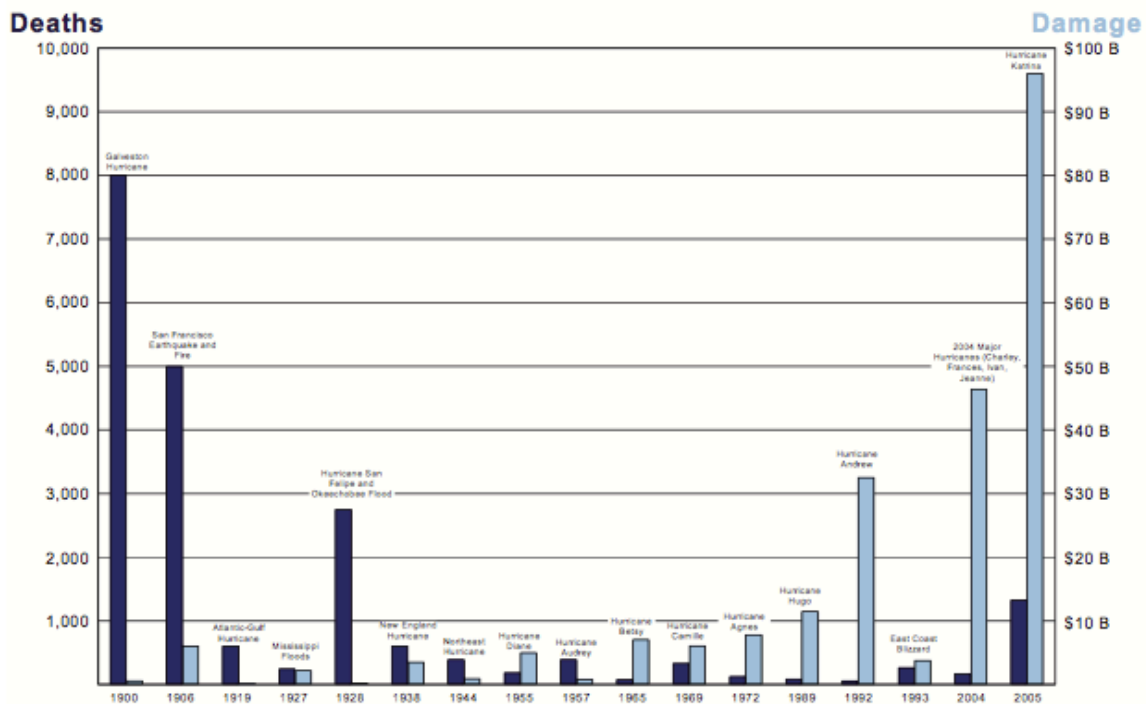
[351]"Hurricane Katrina: A Nation Still Unprepared," (U.S. Senate, 2006), 69. Note: All times noted in this chapter are Central Time unless specified otherwise.

[352] Ibid. 37.

[353] The estimated economic losses from Hurricane Katrina vary but they all rank Katrina as the most economically devastating natural disaster in U.S. history. "The Federal Response to Hurricane Katrina: Lessons Learned," (Washington, DC: The White House, 2006)., 5-6; "Hurricane Katrina: A Nation Still Unprepared.", 37

[354] "The Federal Response to Hurricane Katrina: Lessons Learned," 6.

[355] Ibid.

Hurricane Katrina is a uniquely informative case study in crisis collaboration for a variety of reasons. Most obviously, the geographic scope of the hurricane required a massive and coordinated response stretching across three states, two FEMA regions, and scores of local jurisdictions.

Second, as the most destructive natural disaster in American history, Katrina forced even the most capable organizations to collaborate.[356] It is worth noting, however, that Katrina's devastation had less to do with intensity than trajectory. Seventy-five hurricanes of Katrina's strength at landfall have struck the shores of the United States, but none has resulted in similar devastation.[357] Rather, Katrina was unique because it passed directly over New Orleans, a city with grave vulnerabilities to flooding.

Third, Katrina generated a complex crisis by simultaneously triggering a diverse set of emergencies requiring specialized responses across a massive geographic expanse amidst a climate of confusion and chaos. In addition to the well-known search and rescue emergency in New Orleans, the storm caused at least 10 oil spills resulting in over 7.4 million gallons of oil released into the Gulf, damage to nearly 500 hazardous material sites, and the littering of crucial transit corridors with an estimated 118 million cubic yards of debris.[358] Lastly, Katrina created a truly novel crisis in New Orleans by overtopping the levees in east Orleans and St. Bernard Parishes and breeching the Industrial Canal levees and the 17th Street and London Avenue floodwalls. For this reason, the Hurricane Katrina catastrophe is best described as a disaster within a disaster.[359]

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[356] Ibid. 2
[357] Ibid. 5
[358] Ibid. 8
[359] Harrald R, "Agility and Discipline: Critical Success Factors for Disaster Response," 257.

Although the direct effects of the hurricane were a world-class disaster in its own right, the overwhelming devastation and human toll of the catastrophe was the result of levee and floodwall failures in the New Orleans area. The compounding effects of these synchronized and co-located disasters was greater than the sum of its parts. The scope, intensity, complexity, and novelty of the catastrophe triggered by Katrina required a broad and sustained collaborative effort under the most adverse circumstances imaginable.[360] The figure below provides an indication of the scope, diversity, and tempo of response and recovery operations related to Hurricane Katrina in the Gulf Coast.

Figure 7: Collaborative activity during Hurricane Katrina response operations[361]

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[360] The best available estimates suggest that between 513 and 580 organizations participated in response and recovery operations after Hurricane Katrina and that at least 318 of them collaborated. LK Comfort and Thomas W. Haase, "Communication, Coherence, and Collective Action: The Impact of Hurricane Katrina on Communications Infrastructure," *Public Works Management and Policy* 11, no. 1 (2006).; N Kapucu, T Arslan, and M. L Collins, "Examining Intergovernmental and Interorganizational Response to Catastrophic Disasters: Toward a Network-Centered Approach," *Administration & Society* 42, no. 2 (2010).
[361] Comfort and Haase, "Communication, Coherence, and Collective Action: The Impact of Hurricane Katrina on Communications Infrastructure."

Entry of Actors into Interaction System by Date and Jurisdiction
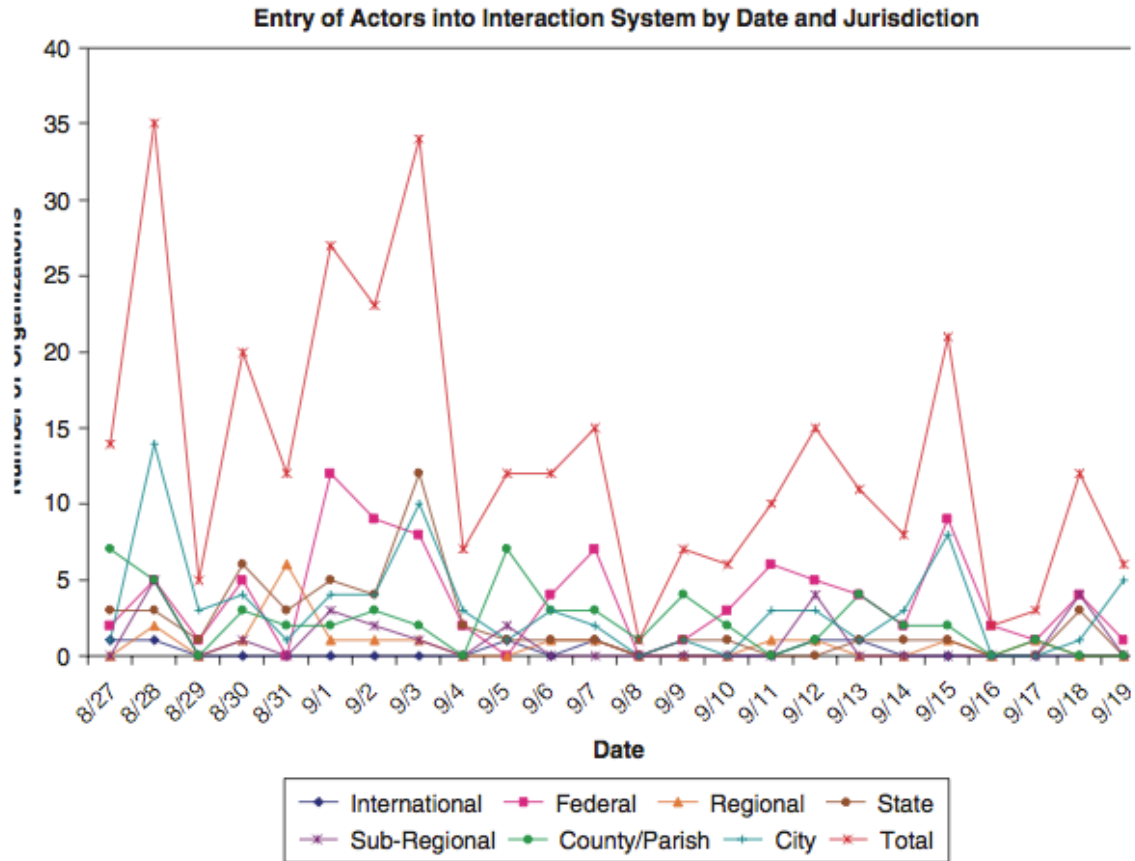
A Crisis Foreseen

Hurricane Katrina was many things—a natural disaster, a failure of civil engineering, and an act of God—but it was not a surprise. According to the House Select Bipartisan Committee Investigation (House Report), the crisis provoked by Hurricane Katrina "was not only predictable, it was predicted."[362] In fact, the ruinous threat posed to New Orleans by a severe hurricane was well understood for decades prior to the summer of 2005. The flood protection system surrounding New Orleans was designed in the 1970s and 1980s to withstand a category III hurricane, but nothing stronger.[363]

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[362] *A Failure of Initiative*, xi.
[363] Detlof Von Winterfeldt, "Using Risk and Decision Analysis to Protect New Orleans against Future Hurricanes," in *On Risk and Disaster: Lessons from Hurricane Katrina*, ed. R. Daniels, D. Kettl, and H. Kunreuther (Philadelphia: University of Pennsylvania, 2006), 28. "Hurricane Katrina: A Nation Still Unprepared," 128.

Policymakers at all levels of government were willing to tolerate the risk of catastrophe

in order to avoid the complexity and cost of a system capable of enduring a category V

storm.[364] In the years since this fateful decision, government policies encouraging

development in flood-prone areas, under-investment in mitigation activities, neglect of

the flood protection system, and environmental change—including a steadily sinking city,

a gradually rising sea level, and the constant erosion of the Mississippi River Delta—

exacerbated this risk.[365]

In 2002, in a series of articles featured in the New Orleans *Times-Picayune,*

Jefferson Parish emergency management official Walter Maestri envisioned a hurricane

flooding New Orleans and projected up to 40,000 fatalities.[366] That same year, an Army

Corps of Engineers study predicted that 100,000 might perish in the flooding sure to

follow a category IV or stronger storm.[367] In 2003, the Department of Homeland Security

identified an earthquake in California, a terrorist attack in New York City, and a

hurricane striking New Orleans as the three most serious calamities likely to befall the

nation.[368] One year before Hurricane Katrina struck, Hurricane Ivan, a category IV

hurricane, narrowly missed New Orleans. Shirley Laska of the Center for Hazards

Assessment, Response, and Technology at the University of New Orleans, used the

occasion to argue that if Ivan had struck the Crescent City, New Orleans would have been

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[364] Some estimates today suggest that it would cost in excess of $30 billion to build a flood control system capable of surviving a Category V Storm. Kenneth R. Foster and Robert Giegengack, "Planning for a City on the Brink," in *On Risk and Disaster: Lessons from Hurricane Katrina*, ed. R. Daniels, D. Kettl, and H. Kunreuther (Philadelphia: University of Pennsylvania Press, 2006), 49.

[365] Ibid.

[366] Detlof Von Winterfeldt, "Using Risk and Decision Analysis to Protect New Orleans against Future Hurricanes," ibid. (University of Pennsylvania)., 28

[367] Ibid. 28

[368] R. Daniels, D. Kettl, and H. Kunreuther, "Introduction," ibid. (University of Pennsylvania Press), 5.

inundated under 20 feet of water and 80% of the city's structures would have been severely damaged in catastrophic flooding.[369] In October of the same year, *National Geographic* published a remarkably accurate story on the damage a hurricane could inflict on New Orleans.[370] Around the same time, FEMA staged the Hurricane Pam exercise, which simulated a category III hurricane striking New Orleans and played-out the challenges of an intergovernmental response.[371] Thus, Hurricane Katrina was not a strategic surprise and the troubled response was in no way the result of a "failure of imagination."

Neither was Hurricane Katrina a surprise in a tactical sense. In the weeks, days, and hours preceding Hurricane Katrina's landfall in Louisiana, NOAA issued a steady stream of increasingly urgent reports to local, state, and federal officials across the Gulf Coast. In fact, Dr. Max Mayfield even took the unusual step of personally warning the governors of Louisiana and Mississippi and the mayor of New Orleans on Saturday, August 27th.[372] These warnings were timely, accurate, and consistent. The chronology that follows will detail the near-term warnings provided to policymakers at all levels of government.

The fact that the devastation wrought by Hurricane Katrina was not only *foreseeable* but actually *foreseen*, in both a strategic and tactical sense, has important implications. Most notably, it underscores the need to assess how the agencies involved in response operations behaved before the storm struck as well as in its aftermath.

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[369] Shirley Laska, "What If Hurricane Ivan Had Not Missed New Orleans?," *Natural Hazards Observer*, no. November (2004).

[370] Joel K. Jr. Bourne, "The Big Uneasy: Gone with the Water," *National Geographic*, October, 2004.

[371] Daniels, Kettl, and Kunreuther, "Introduction", 5.

[372] Tamara Lush, "For Forecasting Chief, No Joy in Being Right," *St. Petersburg Times*, August 30, 2005.

Therefore, the analysis in ensuing chapters will evaluate how preparedness activities interacted with the emergent circumstances of the response operation to determine the collaborative outcomes witnessed in the storm's wake.

Collaborative Performance Expectations

Disaster response and recovery in the United States has evolved into a shared responsibility among all levels of government, the private sector, non-governmental organizations, and individuals. It is loosely governed by a matrix of laws stretching back to the beginning of the 19th century and a family of interagency and intergovernmental plans and policies. Prior to passage of the Disaster Relief Act of 1950, Congress enacted disaster relief on an ad hoc basis.[373] The Disaster Relief Act of 1950 authorized federal agencies to assist in response and recovery activities at the direction of the president when state and local governments were overwhelmed. Between 1966 and 1974, additional legislation increased the categories of assistance provided by the Federal Government and expanded the types of organizations eligible for aid.[374]

Increasing federal interest in disaster relief paralleled growing concern over civil defense preparations and continuity of government. Although civil defense was widely considered a state responsibility during World War II, the Cold War caused policymakers to expand their notion of federal responsibility to include continuity of government, the nation's capacity to access key resources and mobilize critical industry, and

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[373] Henry Hogue B and Keith Bea, "Federal Emergency Management and Homeland Security Organization: Historical Development and Legislative Options," (Congressional Research Service, 2006), 4-5.
[374] Keith Bea, "Organization and Mission of the Emergency Preparedness and Response Directorate: Issues and Options for the 109th Congress," (Washington, DC: Congressional Research Service, 2005), 58.

communities' ability to implement protective and response measures in the event of attack.[375] Over time, emergency management and civil defense programming proliferated among the agencies and departments of the executive branch. In the years since this time, successive administrations have sought to integrate and coordinate emergency management and civil defense activities through re-organizations and policy constructs.

In the months preceding Hurricane Katrina, emergency management activities were preponderantly centralized within the purview of the Department of Homeland Security but still partially distributed among other departments and agencies of the Federal Government, including the Department of Defense, Department of Health and Human Services, and many others. Thus, a number of policy constructs and coordinating mechanisms were essential to achieving a collaborative federal response to national crises. Prior to exploring the unraveling of the Hurricane Katrina disaster, it is useful to briefly review the institutions that should have governed inter-organizational and intergovernmental collaboration during the response to Hurricane Katrina: the National Incident Management System and the National Response Plan. This background will conclude with a concise description of how responding organizations should have collaborated according to documented policy and specify observable indicators to determine whether or not collaborative expectations were met.

National Incident Management System

First-responders from a variety of disciplines, including the fire service and law enforcement, have wrestled with the challenges of multi-agency incident management for

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[375] Hogue B and Bea, "Federal Emergency Management and Homeland Security Organization: Historical Development and Legislative Options," 6.

decades. In general, the difficulties of incident management increase with the number of

organizations involved and the geographic scope of the incident. Consequently,

firefighting organizations responsible for managing wildfires, including the U.S. Forest

Service, were at the forefront of the development of the doctrine, structures, and

processes that would later form the basis of National Incident Management System, the

Incident Command System.

The Incident Command System was borne of a devastating wildfire in Southern

California that raged for 13 days, cost 16 lives, and generated losses totaling $234

million.[376] In response to reports of communication and coordination failures hampering

the response, Congress directed the U.S. Forest Service (Forest Service) to develop a

system for multi-agency coordination. The Forest Service drew on organizational and

decision-making models widely used in military planning and operations to design a

system for civilian firefighting.[377] In collaboration with experts from state and local

agencies, the U.S. Forest Service formed the Firefighting RESources of California

Organized for Potential Emergencies (FIRESCOPE) system, which united regional

firefighting agencies in a common effort to develop and adopt the incident command

system and a Multi-Agency Coordination System. By 1982, the multidisciplinary and

regional success of FIRESCOPE led to efforts to re-brand it for national adoption by all

types of first responders under the rubric of the National Interagency Incident

Management System. Over the next two decades, adoption of the National Interagency

Incident Management System was uneven and inconsistent. Although some fire services

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[376] "Position Paper: Nims and the Incident Command System," (Washington, DC: Federal
Emergency Management Agency, 2004).
[377] A.M. Howitt and Herman B. Leonard, *Managing Crises: Responses to Large-Scale
Emergencies* (Washington, DC: CQ Press, 2009), 131.

adopted the incident command system, first-responders from other disciplines, such as law enforcement, largely lacked common doctrine, terminology, and standards.

In March of 2004, DHS issued the National Incident Management System in order to facilitate "effective, efficient, and collaborative incident management" on a national scale.[378] As formulated by DHS, the National Incident Management System provides guidance regarding the incident command system, multiagency coordination systems, training, identification and management of resources (including systems for classifying types of resources), standardization, and information management processes.[379] In practice, the National Incident Management System provides a common template for incident management by specifying a flexible set of common structures, processes, and terminology for incident management. At its core, it is " a management system designed to integrate resources to effectively attack a common problem."[380] By adopting the National Incident Management System, unique organizations from a diversity of disciplines develop a common interface for coordination and collaboration with other organizations that is flexible and scalable. Moreover, DHS committed to encouraging the mass adoption of the National Incident Management System by providing National Incident Management System training services and gradually requiring DHS grant recipients to enroll in the training and adopt the National Incident Management System beginning in fiscal year 2005.[381]

One of the most important principles of the National Incident Management System is that response operations should be assembled from the bottom-up. The

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[378] Department of Homeland Security, "National Incident Management System."
[379] Department of Homeland Security, "National Response Plan", 69-70.
[380] "Position Paper: NIMS and the Incident Command System."
[381] Tom Ridge, "National Incident Management System Letter to Governors," (Washington, DC: Department of Homeland Security, 2004).

National Incident Management System is designed to be a "self-assembling hierarchy" that maintains the same basic structure and processes even as the response scales-up.[382] In practice, the National Incident Management System will often "grow in both directions," with self-assembling responders deploying in concert with the imposition of a headquarters operation to manage resources, planning, and coordination.[383]

A second key element of the National Incident Management System is the concept of unified command. A unified command brings together organizational leaders at a single incident command post to jointly set objectives, coordinate resource priorities, share planning/logistical/administrative functions, and appoint a common operational official to direct tactical efforts.[384] Contrary to what its name would imply, a unified command is not a command-driven hierarchy but rather a structured process to achieve coordination and collaboration. The purpose of the unified command is to jointly develop and execute a common strategy, or incident action plan, to manage the consequences of an incident.
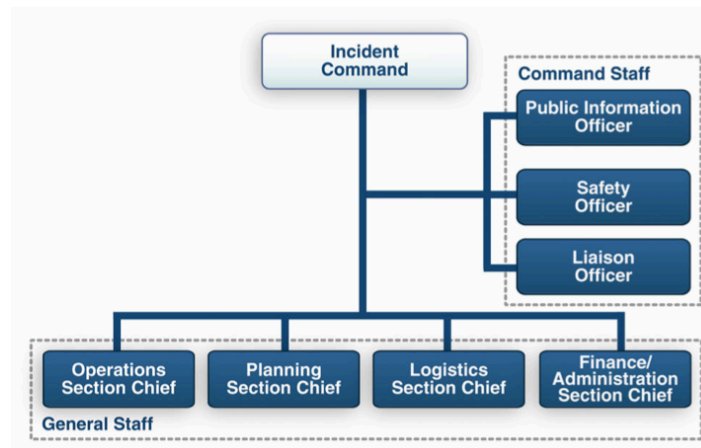
A third key element of the National Incident Management System is structural. The National Incident Management System prescribes the organization of a common incident command system. The general staff of the incident command system includes four sections responsible for planning, supplying, operations, and tracking response activities. Each section contains branches, divisions, and specific resources that can be scaled to meet the scope of any incident. Figure 8: The National Incident Management System, illustrates the structural components of the National Incident Management System.

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[382] Howitt and Leonard, *Managing Crises: Responses to Large-Scale Emergencies*, 132-133.
[383] Ibid. 132-133
[384] Security, "National Incident Management System," 50.

Figure 8: The National Incident Management System[385]

Fourth, the National Incident Management System provides doctrine to encourage organizations to establish coordination systems prior to crises in the form of the multi-agency coordination system. The purpose of the multi-agency coordination system is to "coordinate activities above the field level and to prioritize the demands for critical or competing resources, thereby assisting the coordination of the operations in the field."[386] In practice, multi-agency coordination typically occurs at local and state emergency operations centers and is often informal and highly variable across jurisdictions.

Lastly, the National Incident Management System institutionalizes a general process to guide response operations. The National Incident Management System establishes "a set of processes and procedures through which information about the situation is assembled and analyzed, predictions are made about how things will evolve, options are developed and decided on, and plans are formulated."[387]

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[385] Ibid. 53.
[386] Ibid. 64.
[387] Howitt and Leonard, *Managing Crises: Responses to Large-Scale Emergencies*, 135.

However, in August of 2005, the National Incident Management System was still new to many federal departments and agencies and most of the jurisdictions involved in Hurricane Katrina response operations. Although many organizations, including the New Orleans Fire Department, already used the incident command system, after action reports indicate the few organizations had effectively adopted the National Incident Management System.[388] Critiques of the National Incident Management System allege that it is insufficiently flexible and is incapable of marshalling the political and moral authority to make difficult choices during crises.[389] Other critiques argue that National Incident Management System provides inadequate guidance to first responders in the earliest, sense-making stages of an unfolding event, and is most useful in the latter, more bureaucratic phases of incident management.[390]

National Response Plan

The National Response Plan was issued by DHS in December of 2004, and was to be fully implemented by December of 2005.[391] Upon issuance, the National Response Plan superseded a patchwork of federal plans, including most notably, the Federal Response Plan, its immediate predecessor. The National Response Plan outlines the structure and processes underlying a national approach to domestic incident management. The purpose of the National Response Plan is to "establish a comprehensive, national, all-hazards approach to domestic incident management across a spectrum of activities

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[388] "A Failure of Initiative"; "Hurricane Katrina: A Nation Still Unprepared"; "The Federal Response to Hurricane Katrina: Lessons Learned."

[389] Howitt and Leonard, *Managing Crises: Responses to Large-Scale Emergencies*, 10; Harrald R, "Agility and Discipline: Critical Success Factors for Disaster Response."

[390] Cynthia Renaud, "The Missing Piece of Nims: Teaching Incident Commanders How to Function in the Edge of Chaos," *Homeland Security Affairs* 8(2012).

[391] "National Response Plan."

including prevention, preparedness, response, and recovery."[392] Of interest to this research, it was the primary institution governing the integration of the efforts and resources of responders from all levels of government, the private sector, and non-governmental organizations. The National Response Plan is consistent with and complementary to the National Incident Management System and is designed to be supplemented by more specific regional and functional plans (e.g. a regional hurricane plan or a functional improvised nuclear device plan). The National Response Plan includes a base plan detailing planning assumptions, roles and responsibilities, a concept of operations, and generic incident management actions. It also includes extensive appendices and annexes detailing supporting information, implementation guidance, and a catalog of emergency support functions.

Significantly, the National Response Plan contains special provisions to accelerate and expand the federal response to the most catastrophic contingencies. Homeland Security Presidential Directive 5 and the National Response Plan detail the Secretary of Homeland Security's authority to declare an Incident of National Significance. These documents define an Incident of National Significance as "an actual or potential high-impact event that requires a coordinated and effective response by an appropriate combination of federal, state, local, tribal, nongovernmental, and /or private sector entities."[393] By declaring an Incident of National Significance, the Secretary of Homeland Security can pre-deploy assets and invoke proactive planning constructs, such as the Catastrophic Incident Annex of the National Response Plan, to "push" resources into the affected area in the event of the incapacitation of state and/or local government.

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[392] Ibid. 2.
[393] Ibid.

The Emergency Support Function Annex is particularly important and serves a number of functions. First, it structures the organization and administration of response operations at the strategic level into functionally organized teams, or emergency support functions. Second, the National Response Plan establishes a lead federal agency responsible for coordinating the activities of supporting agencies within the same emergency support function. Third, the Emergency Support Function Annex assigns lead and supporting agencies specific responsibilities and provides a very general concept of operations to guide the activities of each emergency support function.

In addition to the emergency support functions, the National Response Plan assigns roles and responsibilities to a variety of interagency entities:

- The **Interagency Incident Management Group** is a Federal headquarters-level coordination entity designed to provide strategic decision-making support and facilitate planning and coordination for large-scale incidents. The Interagency Incident Management Group is activated by the Secretary of Homeland Security and includes representatives of DHS and other federal agencies. It is designed to help agencies anticipate the needs of state and local jurisdictions and actively push supplies to them before they are even requested.
- The **Homeland Security Operations Center** is the primary national clearinghouse for incident management situational awareness. The Homeland Security Operations Center is a standing operations center that facilitates information sharing among federal, state, local, tribal, and nongovernmental Emergency Operations Centers. The Homeland Security Operations Center is a sub-component of DHS and analyzes information from around the nation and provides intelligence to the White House Situation Room, Interagency Incident Management Group, and all levels of government.
- The **National Response Coordination Center** provides federal operational coordination services for major incidents. The National Response Coordination Center is a functional component of the Homeland Security Operations Center and serves as FEMA's operations center for incident management. The National Response Coordination Center includes representatives from over 40 departments and agencies and is also staffed by representatives of the primary and supporting agencies of all activated emergency support functions.
- The **Regional Response Coordination Center** is activated preceding or during major incidents to coordinate regional response efforts and determine federal priorities until a Joint Field Office can be established in the field. Regional Response Coordination Centers are maintained by FEMA in FEMA's 10 regional offices and are primarily

staffed by FEMA officials stationed in the region full-time. The Regional Response Coordination Centers often serve as an intermediary between state emergency operations centers and the National Response Coordination Center.

- The **Principal Federal Official** is designated by the Secretary of Homeland Secretary and is his/her primary point of contact for situational awareness with respect to incident management. The Principal Federal Official does not direct operations but serves in an advisory capacity.

- The **Federal Coordinating Officer** directly manages and coordinates federal support to Stafford Act disasters and emergencies. The Federal Coordinating Officer provides overall coordination for federal entities, heads the Joint Field Office, and works with his/her state counterpart, the **State Coordinating Officer**. Federal Coordinating Officers are "appointed by the president and armed with a letter bearing the seal of the Oval Office." The Federal Coordinating Officer is empowered to task the entire federal bureaucracy to assist in response operations.

- The **Joint Field Office** is a central coordination center established in the immediate vicinity of the affected area during a major incident. To the extent possible, all federal agencies and state emergency management officials co-locate at the Joint Field Office to provide integrated support to on-scene operations. The Joint Field Office is headed by the Principal Federal Official and/or the Federal Coordinating Officer and is organized in accordance with National Incident Management System structures and processes.[394] The Joint Field Office includes federal emergency support function representatives and state and local officials. The **Joint Field Office Coordination Group** includes the Principal Federal Official , Federal Coordinating Officer, State Coordinating Officer, and other functional senior officials as appropriate (e.g. the Senior Federal Law Enforcement Official).

- The **Emergency Response Team** is the principal interagency group staffing the Joint Field Office and is comprised of FEMA staff and interagency emergency support function representatives. The ERT includes an advance element, **Emergency Response Team-Advance** that pre-deploys to conduct assessments and coordinate initial deployments. A larger, more capable team, the **National Emergency Response Team** deploys for major incidents as necessary.

- The **Incident Command Post** is a tactical-level, on-scene incident management entity. The Incident Command Post is staffed by senior officials from responding organizations and is supposed to be organized in accordance with the National Incident Management System.[395]

Critics of the National Response Plan argue that it was—at 426 pages—either too long to be useful or too short and abstract to be operationally relevant. Most could agree, however, that the National Response Plan was very difficult to understand. In fact, "the evidence suggests that neither Secretary Chertoff nor other DHS leaders fully understood

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[394] Ibid. 29.
[395] These abbreviated descriptions are based on analysis of the text of the National Response Plan (2004) ibid.

the Department's responsibilities under the National Response Plan."[396] Of particular

note, the distinction between the responsibilities and authorities of the Principal Federal

Official and Federal Coordinating Officer, and the circumstances that trigger an "Incident

of National Significance" were not clearly understood.

Figure 9: The National Incident Management System Framework[397]
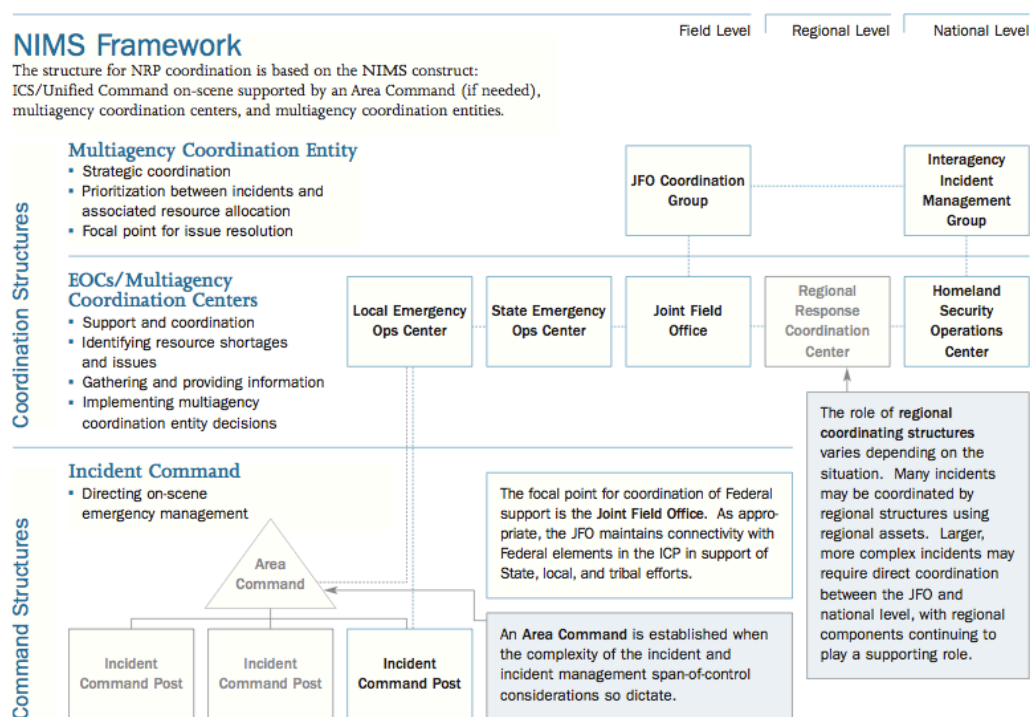
Envisioning a collaborative response

In order to understand how crisis collaboration can be improved, it is important to

determine whether or not collaborative shortcomings are the outcome of failed plans and

policy, execution, or both. To this end, it is a worthwhile exercise to envision what a

collaborative response—as detailed in plans and policy—would have looked like and

then to compare that to what is observable in the historical record.

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[396] "Hurricane Katrina: A Nation Still Unprepared." 168.
[397] "National Response Plan," 19.

Coast Guard

This case focuses first on Coast Guard search and rescue operations related to Hurricane Katrina. According to Coast Guard plans and policy, prior to the storm's arrival the Coast Guard should have pre-positioned crews outside of the immediate disaster area and prepared to surge key personnel and assets into the area in the storm's immediate aftermath. Per Homeland Security Presidential Directive-5, Coast Guard personnel should also have been trained to implement the National Incident Management System and the National Response Plan.

Of course, the National Response Plan should have governed much of the Coast Guard's collaborative activity. First, the Coast Guard should have participated in a unified command established by FEMA to coordinate search and rescue operations. Second, as a member of Emergency Support Function-5 (search and rescue), the Coast Guard should have had a common, well-exercised mass search and rescue plan that was understood by its search and rescue partners, such as Louisiana Wildlife and Fisheries. Fourth, the Coast Guard should have maintained a robust capability to communicate internally and with operational partners. Lastly, the Coast Guard should have had a plan for survivor services in the event of catastrophic damages to local infrastructure and services.

As the remainder of this chapter will demonstrate, the evidence clearly supports the conclusion that the Coast Guard *did not* exhibit high collaborative performance in its response to Hurricane Katrina. Although coordination and collaboration were halting in early stages of the crisis, the evidence does suggest that the Coast Guard engaged in rapid cycles of organizational adaptation and that field personnel improvised effectively to

compensate for the absence of effective interorganizational governance arrangements. Furthermore, it is clear that serious communications problems and shortfalls in command and control detracted from collaborative performance.

Although the Coast Guard response to Hurricane Katrina was not an example of superior collaborative performance, in many respects, it was a qualified operational success. The Coast Guard rescued approximately 33,000 survivors and the combined interagency effort saved an estimated 60,000 lives.[398] The Coast Guard's strength in the administration of its own capabilities, rapid organizational learning, and adaptive approach to crisis management begin to explain the apparent discrepancy between the impressive operational outcome of the Hurricane Katrina search and rescue operation and the poor collaborative performance of the Coast Guard. This finding suggests that organizations with specific attributes can perform admirably in dynamic crises even in the absence of effective collaboration. It also implies that the Coast Guard could have been even more effective had it achieved greater levels of collaborative performance.

Figure 10: Hurricane Katrina survivors rescued by agency[399]

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[398] "Hurricane Katrina: A Nation Still Unprepared," 331.
[399] "A Failure of Initiative," 116.
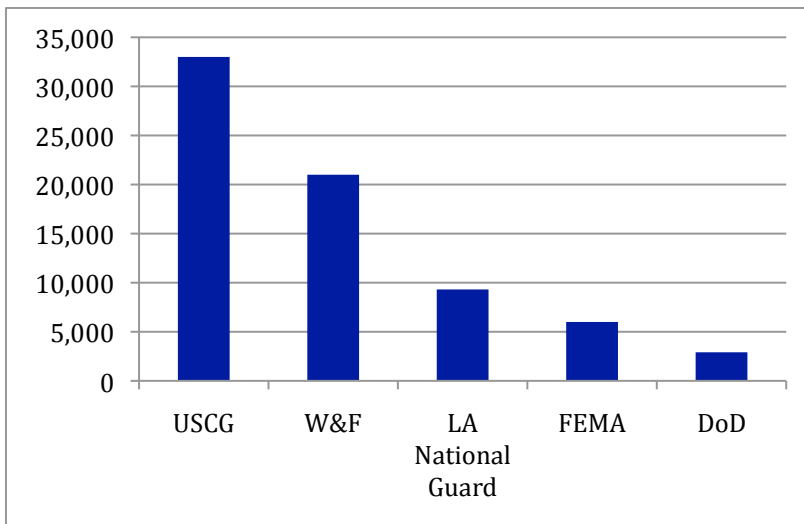
FEMA

FEMA had broader emergency management responsibilities related to Hurricane Katrina. First, according to FEMA policy, the agency should have engaged in substantial preparedness activities in the years leading up to Hurricane Katrina. Joint preparedness activities would have been evidenced by the existence of joint emergency management plans, training, and exercises. Second, per Homeland Security Presidential Directive-5, FEMA should have fielded personnel trained and organized to implement the National Incident Management System and National Response Plan.

The National Response Plan dictates a range of other actions designed to facilitate collaboration. Most importantly, FEMA should have been poised to implement a proactive federal response by invoking the Catastrophic Incident Annex of the National Response Plan to push assets into the affected region instead of waiting for specific support requests from the overwhelmed state governments. Second, FEMA should have named Federal Coordinating Officers and a Principal Federal Official to oversee federal support to affected states in advance of the storm's arrival. Similarly, FEMA should have surged suitably trained federal officials to coordinate the execution of state requests for

assistance. Fourth, FEMA should have established a unified command and a network of

incident command posts in the affected regions, especially New Orleans. Finally, FEMA

should have deployed appropriate personnel and assets to achieve and maintain

situational awareness.

The chronology that follows will demonstrate that FEMA did not exhibit high

collaborative performance during Hurricane Katrina response operations. Arguably, the

fact that FEMA had developed governance arrangements in the form of the National

Incident Management System and the National Response Plan would indicate that FEMA

was at least moving in the right direction. However, the fact that National Incident

Management System and the National Response Plan were still very new and not fully

adopted by FEMA, much less its federal, state, and local partners, seriously undermined

efforts in this area as well.

Unlike the experience of the Coast Guard in Hurricane Katrina, there is little

discrepancy between FEMA's collaborative performance and the operational outcome in

this case. As FEMA's emergency management mission is essentially to lead federal

efforts to support state and local officials, poor collaborative performance is virtually

synonymous with operational failure. The overwhelming conclusion of the federal reports

on Hurricane Katrina response operations assigns significant blame to FEMA for failures

in the domain of emergency management, including specific lapses in preparation,

situational awareness, information sharing, logistics, administration, search and rescue,

emergency medical care, and housing.[400]

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[400] "The Federal Response to Hurricane Katrina: Lessons Learned."; "A Failure of Initiative.";
"Hurricane Katrina: A Nation Still Unprepared."; "A Performance Review of FEMA's Disaster
Management Activities in Response to Hurricane Katrina."

Collaborative Performance in Execution: A Crisis Chronology

The Coming Storm: August 26-August 28

Friday, August 26

After traversing Florida the day prior as a category I hurricane, Katrina was

upgraded to a category II hurricane as it drew strength from the warm waters of the Gulf

of Mexico. The National Hurricane Center updated the previous day's forecast to predict

that Katrina would make landfall as a category IV hurricane just east of New Orleans.[401]

The Director of the National Hurricane Center, Max Mayfield, had been monitoring this

weather pattern since August 11th.[402] By this point, he was nearly certain this storm

would devastate New Orleans, lamenting to Walter Maestri, the Emergency Preparedness

Director in Jefferson Parish, LA, "This is it. This is what we've been talking about all of

these years. You are going to take it… It's a 30, 90 storm," in reference to the exact

longitude and latitude of New Orleans.[403]

Emergency Management

FEMA activated its Hurricane Liaison Team, consisting of officials from FEMA,

the National Weather Service, and state and local emergency management officials on

August 24th.[404] Governor Haley Barbour of Mississippi and Governor Kathleen Blanco of

Louisiana declared states of emergency and activated the National Guard. Officials in

Alabama activated the State Emergency Operations Center.[405]

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[401] "Hurricane Katrina: A Nation Still Unprepared", 67.
[402] C. Cooper and R. Block, *Disaster: Hurricane Katrina and the Failure of Homeland Security* (Times Books, 2006), 95.
[403] "Hurricane Katrina: A Nation Still Unprepared," 51.
[404] "A Failure of Initiative," 59.
[405] "A Performance Review of FEMA's Disaster Management Activities in Response to Hurricane Katrina," (Washington, DC: Department of Homeland Security, Office of Inspector General, 2006), 146.

The Louisiana Office of Homeland Security and Emergency Preparedness activated a coordination team at 2:00pm on August 25[th] and began consulting with local officials across the state in order to advance storm preparations.[406] Because of the magnitude of the task and limited emergency management capacity, the Louisiana Office of Homeland Security and Emergency Preparedness was almost exclusively focused on evacuation and special-needs sheltering arrangements prior to the storm.

Search and Rescue

The Coast Guard began implementing a hurricane evacuation plan for its own personnel by establishing an Incident Command Post in Alexandria, Louisiana, moving the Sector Mobile Command to Maxwell Air Force Base, Alabama, and shifting the Eighth District Command to St. Louis, Missouri.[407] The Coast Guard pre-positioned boats, crews, and communications platforms to locations close to the storm's path but safe from its most destructive elements. Coast Guard liaison officers were dispatched to the Louisiana State Emergency Operations Center and the New Orleans Emergency Operations Center.[408] These officers would later play a vital role coordinating search and rescue operations with federal, state, and local officials.

Louisiana's lead agency for search and rescue, the Louisiana Department of Wildlife and Fisheries (Wildlife and Fisheries) began preparations early. Wildlife and Fisheries reviewed relevant emergency preparedness manuals, staged rescue boats and equipment in locations in and around the disaster zone, and secured assets for the coming storm.[409]

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[406] "Hurricane Katrina: A Nation Still Unprepared," 149.
[407] Ibid. 184
[408] Ibid. 184
[409] Ibid. 149

Saturday, August 27

At 4:00am, the National Hurricane Center declared Katrina a category III hurricane and, for the first time, predicted a direct hit on New Orleans.[410] Later in the day, the National Weather Service advised the City of New Orleans Office of Emergency Preparedness that the New Orleans levees could be overtopped during the storm. In the early evening, National Hurricane Center Director Max Mayfield briefed Governor Blanco of Louisiana, Governor Barbour of Mississippi, and Mayor Nagin of New Orleans on Katrina's likely impact before issuing an official storm-surge forecast later that night predicting tides as high as 25 feet.[411]

Emergency Management

At 6:00am Eastern Standard Time, FEMA headquarters began 24-hour operations in anticipation of the looming disaster.[412] FEMA opened the National Response Coordination Center, FEMA's national operations center in Washington, DC, and convened the planners responsible for each of the emergency support functions detailed in the National Response Plan. These officials were in charge of coordinating activities ranging from mass housing to hazardous materials response to public affairs. FEMA also activated the Emergency Management Assistance Compact, a mutual aid arrangement facilitating the expedited transfer of response assets among the states, in anticipation of coming state requests.[413] FEMA's regional offices in Denton, Texas, and Atlanta,

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[410] Ibid. 67.
[411] Ibid. 68.
[412] Ibid. 67.
[413] "A Performance Review of FEMA's Disaster Management Activities in Response to Hurricane Katrina," 146.

Georgia, activated their Regional Response Coordination Centers to coordinate

preparation and response efforts in the region.[414]

FEMA also deployed Emergency Response Team-Advance units to the Regional

Response Coordination Center in Atlanta, Georgia, the State Emergency Operations

Center in Alabama, and the State Emergency Operations Center in Mississippi. FEMA

also ordered its most capable emergency management field team, Emergency Response

Team-National and a liaison officer to the Louisiana State Emergency Operations Center

in anticipation of the havoc the storm would soon wreak across the state.[415] However,

FEMA was only able to deploy about half of the members of Emergency Response

Team-National and a similar percentage of the members of its Emergency Response

Team-Advance units to the disaster zone before the storm arrived. As a result, key

positions went unfilled.[416]

At 7:44pm, President Bush issued an emergency declaration for Louisiana and

designated William Lokey as the responsible Federal Coordinating Officer.[417] As Federal

Coordinating Officer, Lokey was the lead operational authority for federal activities in

the State of Louisiana and an essential conduit for coordination and collaboration among

responders and the Federal Government. At 4:00pm, FEMA evacuated its Joint Field

Office staff from New Orleans to Baton Rouge.[418] The Joint Field Office is designed to

serve as the primary hub for information integration and operational coordination in the

affected state. This tactical retreat would dramatically reduce FEMA's situational

[414] Ibid. 147.

[415] "DHS/FEMA Initial Response Hotwash: Hurricane Katrina in Louisiana, Dr-1603-La," (New Orleans, LA2006), 77.

[416] "Hurricane Katrina: A Nation Still Unprepared," 176.

[417] "A Performance Review of FEMA's Disaster Management Activities in Response to Hurricane Katrina," 147.

[418] "DHS/FEMA Initial Response Hotwash: Hurricane Katrina in Louisiana, Dr-1603-LA," 77.

awareness in the days that followed. FEMA staged critical assets and personnel, including Mobile Emergency Response System communications units, supplies, and urban search and rescue teams, well outside the path of the storm.[419] Although this strategy was justifiable on the grounds of self-preservation, FEMA lacked the capacity to rapidly transport many of its most critical personnel and assets to the scene across storm-ravaged infrastructure.

FEMA officials in Louisiana were growing increasingly concerned with state officials' lack of urgency in evacuating special-needs populations from New Orleans, unfamiliarity with National Incident Management System and the National Response Plan, and insufficient staffing capacity to engage in "hasty planning" activities with FEMA officials to guide activities in coming days.[420] Instead, FEMA officials developed "hasty plans," essentially threadbare incident action plans, without collaborating with state and local officials.

At 9:00am, Louisiana implemented its state evacuation plan and began a phased, voluntary evacuation. Over the course of the day, Mayor Nagin declared a state of emergency for the City of New Orleans and issued a voluntary evacuation order. At noon, the Louisiana State Emergency Operations Center initiated continuous operations.[421] Later in the day, President Bush issued a preemptive emergency declaration for Louisiana in recognition of the gravity of the situation.

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[419] Many assets were deployed to Baton Rouge, Barksdale Air Force Base, and other staging grounds outside the storm's path. However, unlike the Coast Guard, FEMA was unable to rapidly airlift assets into place after the storm passed. For example, see: ibid., 77
[420] "A Failure of Initiative," 187.
[421] "Hurricane Katrina: A Nation Still Unprepared," 68.

In Mississippi, Governor Barbour declared a state of emergency and issued a mandatory evacuation order for Mississippi's coastal counties late that same evening.[422] Storm preparation proceeded according to plan in Mississippi with the activation of the National Guard on August 26[th], the arrival of FEMA's Federal Coordinating Officer at the State Emergency Operations Center, and the deployment of Mississippi Emergency Management Agency liaisons to the counties most likely to be affected during the crisis.[423]

Preparations in Alabama began four days before the storm's arrival.[424] On August 26[th], Governor Riley declared a state of emergency and opened the State Emergency Operations Center to full staffing on August 27[th]. That same day, a FEMA advance team arrived to assist with planning, operations, logistics, and communications. However, the team only consisted of five to eight persons and state officials later complained that FEMA should have deployed sooner and in greater numbers.[425]

The contrast between state level preparations is stark between Alabama and Mississippi on one side and Louisiana on the other. Alabama and Mississippi maintained large, sufficiently funded, and well-staffed emergency management offices and emergency operations centers.[426] Emergency management in Louisiana was chronically under-funded at the state level and, with the possible exception of Jefferson and St.

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[422] "A Performance Review of FEMA's Disaster Management Activities in Response to Hurricane Katrina," 146.
[423] "A Failure of Initiative", 60.
[424] Ibid. 62.
[425] Ibid. 62.
[426] LOHSEP was widely recognized to be under-funded and staffed at about 60% of the national average. Additionally, the Louisiana State Emergency Operations Center was far too small to accommodate the federal and state staff required to manage a catastrophe. In fact, the main room of the Louisiana Emergency Operations Center was designed for 50 people but was filled with over 200 with an additional 750+ persons crowding into the remainder of the building. Ibid., 188; "Hurricane Katrina: A Nation Still Unprepared.", 80-81.

Tammany Parishes, at the local level as well.[427] This fact, in addition to the relatively smaller impact of the storm in those states, demonstrably improved collaborative performance with FEMA and other entities due to the benefits of infrastructure that permitted co-location, relatively stronger communications capabilities, the presence of emergency operations center staff familiar with the National Incident Management System and the National Response Plan, and state staffing capacity.

Search and Rescue

Two days prior to landfall, the relevant Coast Guard command, the 8th Coast Guard District, implemented its hurricane plans.[428] The Coast Guard Incident Management Team was relocated from New Orleans to St. Louis, Missouri. All units in the region were ordered to maintain a heightened level of readiness and the mouth of the Mississippi River was closed to maritime traffic.[429]

Sunday, August 28

At 7:00am, the National Hurricane Center issued a Special Advisory warning that Katrina was a "potentially catastrophic category V hurricane" with sustained winds of 160mph.[430] President Bush issued emergency declarations for Mississippi and Alabama and, in an attempt to underscore the severity of the situation, made a rare appearance in a daily video teleconference with officials from all levels of government responsible for preparing for the storm.[431] Over the course of the day, the National Hurricane Center

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[427] "Hurricane Katrina: A Nation Still Unprepared", 85-86.
[428] "A Failure of Initiative," 68.
[429] "Coast Guard: Observations on the Preparation, Response, and Recovery Missions Related to Hurricane Katrina," 16-17.
[430] "Hurricane Katrina: A Nation Still Unprepared," 68.
[431] Ibid., 694.

delivered multiple verbal and written warnings to officials at all levels of government that the New Orleans levees may be overtopped by the storm surge and associated winds.[432]

Emergency Management

FEMA scrambled to complete final preparations before the storm struck. In response to President Bush's new emergency declarations, FEMA designated William Carwile and Ron Sherman to serve as Federal Coordinating Officers in Mississippi and Alabama respectively.[433] At an 11:00am conference call, FEMA Director Michael Brown exhorted FEMA officials to "just keep jamming those lines full as much as you can with commodities."[434]

Despite the fact that FEMA was on the verge of an event with projected casualties approaching 60,000 persons, the agency did not always act as its rhetoric at the time would imply. For example, Ed Buikema, the Acting Director of the Response Division at FEMA, traveled to Alaska—with Director Brown's approval—for an emergency management conference on August 27th.[435] He later rushed back to Washington, DC, but effectively forfeited the opportunity to lead preparation for the response and sent a confounding message to his staff.

FEMA's National Disaster Medical System teams were ordered to pre-position across the region. One Disaster Medical Assistance Team moved to Baton Rouge and courageously deployed to support what they expected to be a small special needs shelter at the Superdome during the storm and its aftermath.[436] However, by the night before

[432] "A Failure of Initiative," 70.
[433] "A Performance Review of FEMA's Disaster Management Activities in Response to Hurricane Katrina," 147.
[434] "Hurricane Katrina: A Nation Still Unprepared," 68.
[435] Ibid. 173.
[436] "DHS/FEMA Initial Response Hotwash: Hurricane Katrina in Louisiana, Dr-1603-LA," 78.

landfall, only four complete Disaster Medical Assistance Teams, two partial teams, and a few small "strike teams" were staged in the entire Gulf Region and only one was in Louisiana.

Furthermore, prior to the storm's landfall, FEMA had only one employee, Marty Bahamonde, a FEMA public affairs staffer tasked to prepare for high-profile visits, in the City of New Orleans.[437] Although FEMA staffers were forward-deployed to emergency operations centers in the path of the storm in Mississippi, all FEMA personnel except Bahamonde were evacuated from the path of disaster. William Lokey, the Federal Coordinating Officer in Louisiana, explained that he was unable to deploy liaisons to front-line emergency operations centers because of FEMA staffing shortages.[438] This circumstance significantly degraded FEMA's collaborative performance in New Orleans and other affected parishes in Louisiana.

With the storm's arrival imminent, FEMA rushed to position communications assets and prepare for response and recovery operations. In a grim acknowledgment of the storm's potential, FEMA began to coordinate Disaster Mortuary Response Team deployments with state officials. FEMA also pre-positioned Mobile Emergency Response Support detachments, specially equipped vehicles with advanced communications capabilities, to locations in Louisiana, Mississippi, and Alabama to provide emergency satellite communications.[439] Notably, these communications units were also positioned well-outside the path of the storm. Severely damaged infrastructure and flooding, especially in New Orleans, would later interfere with FEMA's ability to push communications assets to where they were needed most in the storm's aftermath.

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[437] "Hurricane Katrina: A Nation Still Unprepared," 176.
[438] Ibid. 178.
[439] "A Failure of Initiative," 59.

The day's warnings and the urgency of the moment finally prevailed over the remaining uncertainties among officials across the region. In Alabama, the Governor declared a state of emergency.[440] At 9:30am, New Orleans Mayor Ray Nagin issued a mandatory evacuation order for Orleans Parish and, in a controversial decision, opened the Superdome as a special needs shelter and later a "refuge of last resort."[441] By 4:00 pm, the Superdome housed 25,000 general population evacuees, 400 special-needs evacuees, and 50 critically ill patients.[442] Mass evacuation for those capable of providing for their own transportation was executed on a remarkable scale and with notable success by state and local officials across the three affected states. Phased evacuations and elaborate contra-flow plans permitted 1.2 million evacuees in Louisiana alone to get out of harm's way in a relatively short period of time.[443] Yet, many were left behind. Terry Ebbert, Director of Emergency Management in New Orleans, acknowledged that the city could not help everyone evacuate stating plainly, "We always knew we did not have the means to evacuate the city."[444] By 5:00pm, the pace of evacuation slowed as New Orleans' estimated 70,000 remaining residents—including many of the city's most vulnerable and disadvantaged residents—hunkered down for the storm.[445]

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[440] "A Performance Review of FEMA's Disaster Management Activities in Response to Hurricane Katrina," 147.

[441] "Hurricane Katrina: A Nation Still Unprepared," 247-248.

[442] "DHS/FEMA Initial Response Hotwash: Hurricane Katrina in Louisiana, Dr-1603-LA," 78. Note: other sources indicate that the total population of the Superdome was closer to 10,000 persons prior to the storm's arrival. "Hurricane Katrina: A Nation Still Unprepared," 155.

[443] Esther Scott, "Hurricane Katrina," in *Managing Crises: Responses to Large-Scale Emergencies*, ed. A.M. Howitt and David Giles (Washington, DC: CQ Press, 2009), 35.

[444] Bier, "Hurricane Katrina as a Bureaucratic Nightmare," 245.

[445] Some estimates suggest that 70,000 persons were in New Orleans at the time of the hurricane while others suggest 200,000 individuals were in the greater New Orleans area at the time. Analysis of available materials suggests that the 70,000 person figure is the most credible. Scott, "Hurricane Katrina," 35; Cooper and Block, *Disaster: Hurricane Katrina and the Failure of Homeland Security*, 122.

Search and Rescue

The Eighth District of the Coast Guard Atlantic Area Command led efforts to prepare for Hurricane Katrina response operations.[446] On August 28th, the Coast Guard established a joint search and rescue task force at the Louisiana EOC including representatives of the Coast Guard, FEMA, Wildlife and Fisheries, and the Louisiana National Guard on August 28th. This task force provided strategic level awareness of the assets each organization had available and processed rescue requests received via the 911 system to develop mission assignments and pass them along to the organization best positioned to act.[447] This informal collaborative endeavor attempted to fill the role of a unified command until one could be established. However, the Coast Guard staffed this organization with junior grade officers; command and control was retained by senior officers at other locations.[448] Moreover, collaboration and deliberative planning was not robust at an operational level. For example, nearly every agency involved in search and rescue failed to acquire maps of New Orleans prior to landfall.[449] Officials eventually resorted to tearing maps out of the back of local phonebooks for distribution to boat crews well after the response was under way.[450]

The Coast Guard also activated support personnel to facilitate air and swift boat operations. Aircraft and crews from around the country were alerted and pre-staged for rapid deployment in support of anticipated search and rescue operations.[451] The Coast Guard attempted to mitigate inevitable disruption and strain to its communications

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[446] "Coast Guard: Observations on the Preparation, Response, and Recovery Missions Related to Hurricane Katrina,"14.
[447] "Hurricane Katrina: A Nation Still Unprepared," 338.
[448] Ibid. 338.
[449] Ibid. 336.
[450] Ibid. 336.
[451] "A Failure of Initiative," 69.

systems by pre-staging communications equipment in the impact zone.[452] Through careful planning and by virtue of its unique air and maritime transport capabilities, the Coast Guard was able to move its personnel and assets beyond the reach of the storm's destructive power and yet close enough that search and rescue operations could begin almost immediately after the storm had passed.

FEMA failed to take appropriate action prior to landfall to prepare for search and rescue operations. In fact, FEMA only pre-positioned three of its urban search and rescue teams in Shreveport, Louisiana, 340 miles from New Orleans, and two others in Meridian, Mississippi.[453] Strikingly, none of the urban search and rescue teams was equipped with boats. As a result of staging and equipment decisions, FEMA urban search and rescue teams did not begin search and rescue operations until approximately 14 hours after local responders and the Coast Guard began rescuing survivors.[454]

At the state level, Wildlife and Fisheries positioned approximately 200 agents in a ring around southern Louisiana awaiting a call from the Governor to begin rescue operations.[455] They would start rescuing citizens from the inundated city just moments after the storm had passed.

The Week of Crisis: August 29th-September 5th

Monday, August 29th

At 6:10am, the eye of Hurricane Katrina made landfall between Grand Isle and the mouth of the Mississippi River on the Louisiana coast.[456] Katrina's storm surge rushed ashore and swept upstream through rivers and lakes at an astonishing 16 feet per

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[452] Ibid. 69.
[453] "Hurricane Katrina: A Nation Still Unprepared," 180-181.
[454] Ibid, 181.
[455] Cooper and Block, *Disaster: Hurricane Katrina and the Failure of Homeland Security*, 121.
[456] "Hurricane Katrina: A Nation Still Unprepared," 69.

second—significantly faster than even the world's most violent river rapids.[457] The surge pushed water levels anywhere from 14-25 feet above normal.[458] While Hurricane Katrina's high winds and heavy rains battered Louisiana, Mississippi, and Alabama, the storm surge quickly overtopped levees on both banks of the Mississippi River causing limited flooding in Plaquemines Parish. At 9:21am, FEMA recorded the first reports of levee breaches and the City of New Orleans began to inundate.[459] Before the morning was out, "catastrophic flooding" had begun in New Orleans as a result of overtopping of levees in east Orleans and St. Bernard Parishes and breaks in the Industrial Canal levees and 17th Street and London Avenue floodwalls.[460] Before the day was over, 80% of the city was under water up to 20 feet deep and nearly a million households were without power across the region.[461]

Yet, the trapped residents of New Orleans were not the only ones in urgent need of assistance in the wake of the storm and rising floodwaters. Many first-line response agencies were also decimated. Members of the New Orleans Police Department and New Orleans Fire Department and their families were effectively victims of the storm themselves. As a result, their capacity to operate after the storm was strained by desertions, exhaustion, and a lack of water-rescue equipment. To make matters worse, the storm and associated flooding destroyed almost the entire public and emergency communications infrastructure in the vicinity of New Orleans.[462] First-responders were

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[457] Ibid, 21, 53.
[458] Ibid, 69.
[459] "A Performance Review of FEMA's Disaster Management Activities in Response to Hurricane Katrina," 147.
[460] "Hurricane Katrina: A Nation Still Unprepared," 69.
[461] "A Failure of Initiative.", 73; "DHS/FEMA Initial Response Hotwash: Hurricane Katrina in Louisiana, Dr-1603-LA," 78.
[462] "Hurricane Katrina: A Nation Still Unprepared," 69.

forced to rely on a limited number of shared mutual-aid channels that barely continued to

function under heavy strain.[463] Louisiana State Senator and Chairman of the State Senate

Homeland Security Committee Robert Barham would later recall,

> People could not communicate. It got to the point that people were literally
> writing messages on paper, putting them in bottles and dropping them from
> helicopters to other people on the ground.[464]

Many evacuees in public shelters also required rapid assistance. The storm

seriously damaged the roof of the Superdome and incapacitated the air conditioning and

communications systems. To make matters worse, the plumbing system soon gave way

under the strain of the conditions.[465] Supplies of water and food were running

dangerously low in many shelters throughout the disaster area. Medical patients requiring

skilled care in public shelters and private facilities were in even more desperate straits.

Tragically, policymakers were largely unable to grasp the severity of the

circumstances. Initial media reports led some to believe that New Orleans had "avoided a

far worse catastrophe" despite a rapidly escalating crisis on the ground.[466] Although

levels of situational awareness varied across agencies, in general, the discrepancies

between reality and reportage increased from local to state to federal officials. Local

officials, like Mayor Nagin, lacked communications and a comprehensive assessment of

conditions across the city. However, Mayor Nagin was situated in New Orleans close to

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[463] Ibid. 335.
[464] "The Federal Response to Hurricane Katrina: Lessons Learned," 37.
[465] "Hurricane Katrina: A Nation Still Unprepared," 69.
[466] See, for example: Peter Whoriskey and Sam Coates, "Amid the Devastation, Some Feel
Relief," *Washington Post*, August 29, 2005.

the flooding in the aftermath of the storm. As a result, he was less inclined to dismiss or

discount sporadic reports of potentially catastrophic flooding.[467]

Similarly, although Governor Kathleen Blanco of Louisiana was unable to

confirm levee breeches in New Orleans on a conference call at 11:00am on the day of the

hurricane—only hours after the first breaches had occurred—she was sufficiently

cognizant of conditions at the Superdome to plead with FEMA's Michael Brown for 500

buses on the evening of August 29[th].[468]

At the federal level, officials at the Homeland Security Operations Center, the

nerve center for federal situational awareness, issued a now infamous report at 5:00pm

indicating that the New Orleans levees had not been breeched despite the fact that the

Homeland Security Operations Center had already received a number of credible reports

suggesting just the opposite over the course of the preceding eight hours.[469] Matthew

Broderick, the DHS official in charge of the Homeland Security Operations Center,

discounted multiple eyewitness reports of levee breaches as unreliable and instead based

his analysis on conservative Army Corps of Engineers reports and a *CNN Headline News*

segment describing parties on Bourbon Street celebrating what a lucky few evidently

mistook for an averted catastrophe.[470] In fact, the Homeland Security Operations Center

had not pre-identified any particular sources of information for monitoring in the Gulf

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[467] The House Report details the earliest known reports of flooding. These reports were generated by local, state, and even federal officials (e.g. U.S. Army Corps of Engineers). Thus, the problem was not a lack of reporting available to any particular agency or level of government, but rather the propensity of policy-makers to discount reports when they were received. "A Failure of Initiative," 94.

[468] Ibid. 69; Cooper and Block, *Disaster: Hurricane Katrina and the Failure of Homeland Security*, 138.

[469]"Hurricane Katrina: A Nation Still Unprepared," 303; Cooper and Block, *Disaster: Hurricane Katrina and the Failure of Homeland Security*, 132-140.

[470] Cooper and Block, *Disaster: Hurricane Katrina and the Failure of Homeland Security*, 151.

Coast and instead intended to "rely exclusively on FEMA officials and the very state and local entities that would be bearing the brunt of the storm's fury to provide situational awareness."[471] This pervasive lack of situational awareness and the severely limited availability of effective communications assets dramatically shaped the contours of a worsening crisis by undermining the urgency of the federal response and complicating the efforts of responders to collaborate.

Emergency Management

President Bush promptly issued major disaster declarations for Louisiana, Mississippi, and Alabama.[472] That evening, FEMA Director Michael Brown assured Governor Blanco that FEMA would send 500 buses to evacuate the Superdome the next day.[473] FEMA rushed 38 National Disaster Medical System teams consisting of 947 personnel to Baton Rouge from across the country.[474] Although Michael Brown failed to recognize the catastrophic scope of the disaster unfolding before him, he did know enough to conclude that the disaster was beyond the scope of FEMA's ability to surge the appropriate staff. In the hours after the storm crashed ashore, Brown sent a memo to Secretary Chertoff requesting 1,000 personnel from DHS within 48 hours and another 2,000 within seven days.[475]

In the wake of the storm, Governor Blanco gave voice to an overwhelmed and under-informed state government in conversation with President Bush pleading, "We

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[471] "Hurricane Katrina: A Nation Still Unprepared," 166.
[472] "A Performance Review of FEMA's Disaster Management Activities in Response to Hurricane Katrina," 147.
[473] "Hurricane Katrina: A Nation Still Unprepared," 69.
[474] "DHS/FEMA Initial Response Hotwash: Hurricane Katrina in Louisiana, Dr-1603-LA," 79; Note: although this figure is credible, another source suggests 31 National Disaster Medical System teams were in-theater as of August 29th: "A Failure of Initiative," 59.
[475] Michael D. Brown, "Memorandum to Michael Chertoff, Secretary of Homeland Security," (Washington, DCAugust 29, 2005).

need your help. We need everything you've got."[476] At the state emergency operations centers, officials struggled to grasp the scope of the disaster as it unfolded. Scott Wells, the Deputy Federal Coordinating Officer stationed at the Louisiana State Emergency Operations Center, remarked that the information flow from New Orleans was so poor that it was like being in a "black hole."[477] Over 113 general population shelters and nine special needs shelters housed at least 31,000 survivors across the region.[478]

In New Orleans, Mayor Nagin's command center at the Hyatt Regency Hotel lost all communications.[479] Local government in New Orleans was effectively decapitated for a critical 48 hours until regular contact was reestablished via the provision of a cell phone from the White House and the return of limited email connectivity.[480] Many officials in parishes surrounding New Orleans found themselves in similar circumstances. Compounding this problem, public safety agencies across Louisiana used a patchwork of different communications systems that were not interoperable.[481] This communications void reduced situational awareness and severely hampered collaborative performance among responding organizations.

Search and Rescue

By 9:00am, the eastern part of New Orleans and Bernard Parish were flooded and thousands of survivors trapped.[482] Coast Guard Disaster response operations began at 2:50pm on the day of landfall with an unprecedented search and rescue effort across New

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[476] Evan Thomas, "How Bush Blew It," *Newsweek*, September 19, 2005.
[477] "Hurricane Katrina: A Nation Still Unprepared," 288.
[478] "DHS/FEMA Initial Response Hotwash: Hurricane Katrina in Louisiana, Dr-1603-LA," 79.
[479] "Hurricane Katrina: A Nation Still Unprepared," 287.
[480] Ibid. 287.
[481] Ibid. 295.
[482] Richard T. Sylves, "President Bush and Hurricane Katrina: A Presidential Leadership Study," *Annals of the American Academy of Political and Social Science* 604 (2006), 46.

Orleans as the city became inundated. A Coast Guard HH-65 helicopter-borne rescue team battled 60-knot winds to winch three generations of a single family to safety from a perilous skiff adrift in the wreckage of Plaquemines Parish.[483] So began the largest search and rescue operation in the history of the United States and the first phase of what would quickly become a multi-faceted response operation. Before it was over, local, state, and federal search and rescue agencies would rescue an estimated 60,000 people from imminent danger.[484]

The Coast Guard exercised command and control over its own units across the Gulf, but largely failed to coordinate or collaborate with other organizations on the surface and in the air.[485] One major problem was the lack of a unified command. As search and rescue operations were unfolding inland, FEMA was technically responsible for establishing a unified command to coordinate the activities of organizations involved in search and rescue, but one was not established until 48 hours after landfall. Another major problem was the absence of a large-scale search and rescue operations plan. According to the House Report on Hurricane Katrina,

> the lack of an interagency plan to address search strategy, planning, and organization, communications, a centralized command structure, air-traffic control, and reception of victims led to hazardous flight conditions, inefficient employment of resources, and protracted waits by victims in need of rescue.[486]

Federal, state, and local search and rescue organizations struggled to coordinate through a variety of channels. In Mississippi, the Coast Guard Sector Incident Management Team coordinated operations from Meridian, Mississippi. In Louisiana, the

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[483] Scott Price, "A Bright Light on the Darkest of Days: The U.S. Coast Guard's Response to Hurricane Katrina," (U.S. Coast Guard Office of the Historian), 18.
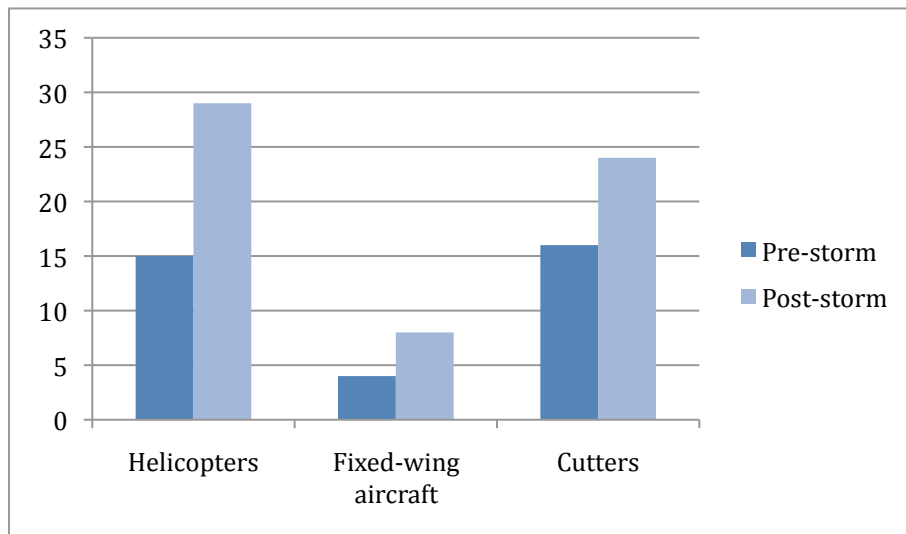[484] "A Failure of Initiative," 116.
[485] Ibid. 69.
[486] "Hurricane Katrina: A Nation Still Unprepared," 344.

Sector New Orleans Incident Management Team was rushed to Alexandria, Louisiana, where it attempted to coordinate operations across the state.

Coast Guard Disaster Assistance Teams converged on the disaster zone from staging areas along the periphery of the storm's path. The Coast Guard rapidly surged highly trained personnel and search and rescue assets into the region through a combination of methods made possible as a result of deliberative planning, training, and modular and interoperable organizational design. Figure 11: The Coast Guard rapidly surged assets and personnel on a massive scale illustrates the scale of the Coast Guard asset surge to the Gulf Coast.

Figure 11: The Coast Guard rapidly surged assets and personnel on a massive scale[487]

The Army National Guard began flying search and rescue sorties four hours after landfall with 65 helicopters staged in Florida, Texas, Louisiana, and Alabama.[488] Active-

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[487] "A Failure of Initiative," 214.
[488] Ibid. 207.

duty military aircraft did not arrive until about 36 hours after landfall and immediately

reported to the Coast Guard Air Station Commander in New Orleans to commence

coordinated operations. By September 8th, the total number of military aircraft would

swell to 293.[489]

Rescuers on the surface were experiencing varying levels of success. Although

FEMA maintained world-class urban search and rescue teams, the agency struggled to

assist the search and rescue effort. Three challenges significantly affected the

effectiveness of FEMA's urban search and rescue teams. First, many FEMA urban search

and rescue teams were staged a significant distance from the disaster area and lacked a

rapid transport capability. Even though mass rescue operations were well underway,

FEMA was still transporting four urban search and rescue teams from over 300 miles

away in Shreveport to Baton Rouge, a city still nearly 100 miles away from New

Orleans.[490] Ultimately, FEMA urban search and rescue teams would not arrive in New

Orleans until the next day.

Second, FEMA's urban search and rescue teams were not prepared for water-

borne rescue operations. FEMA's urban search and rescue teams lacked specialized

training and, more importantly, key equipment, such as a fleet of small watercraft. Lastly,

the initial deployment of search and rescue teams was exceedingly modest.

Reinforcements would not arrive for days after the storm had passed.

Unfortunately, the FEMA urban search and rescue teams were not the only

rescuers in need of watercraft.[491] Incredibly, the New Orleans Fire Department did not

own any boats and failed to train for waterborne rescue operations despite the fact that it

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[489] "Hurricane Katrina: A Nation Still Unprepared," 344.

[490] "DHS/FEMA Initial Response Hotwash: Hurricane Katrina in Louisiana, Dr-1603-LA," 79.

[491] "Hurricane Katrina: A Nation Still Unprepared," 333.

was the lead municipal agency for search and rescue. The New Orleans Police Department was not much better off and only maintained five boats.

However, Wildlife and Fisheries, the lead state agency in Louisiana for search and rescue, was ready to respond. Wildlife and Fisheries personnel were appropriately trained and equipped for water-borne search and rescue and had staged boats close to the disaster zone. By 4:00pm on the day of the storm, Wildlife and Fisheries personnel rushed over 60 of their 200 boats into New Orleans and began search and rescue operations.[492] Following rescue, Wildlife and Fisheries ferried survivors to one of three staging areas on highway overpasses. Wildlife and Fisheries also received valuable assistance from the Louisiana National Guard, which had helicopters and additional boats.[493] By Tuesday afternoon, Wildlife and Fisheries had already rescued over 1,500 people.[494]

However, Wildlife and Fisheries did suffer a number of critical shortcomings. Wildlife and Fisheries had trouble maintaining communications with its own boats and was largely unable to communicate with Louisiana National Guard and Coast Guard units.[495] Moreover, Wildlife and Fisheries failed to coordinate state and local search and rescue organizations as was its mandate in existing state plans. Similarly, Wildlife and Fisheries neglected to request search and rescue units from other states until the disaster was well underway. As a result, supplementary swift water rescue teams did not arrive in the area until August 30[th].[496]

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[492] Ibid. 333.
[493] Ibid.
[494] Ibid. 331.
[495] In fact, Wildlife and Fisheries eventually resorted to purchasing walkie-talkies from a local sporting goods store to allow for communication among its operations centers and boats. Ibid. 333.
[496] Ibid. 340.

At approximately 2:00pm, locally led search and rescue operations began across Mississippi.[497] By 10:00pm, Mississippi Emergency Management Agency search and rescue teams arrived in the most severely affected disaster zones to begin search and rescue operations.[498] The contrast between search and rescue operations in Louisiana and Mississippi is striking. As a result of the leadership and planning of the Mississippi Emergency Management Agency and the more conventional nature of the crisis in Mississippi, responding search and rescue organizations were able to establish a unified command, coordinate a methodical and efficient search of the affected counties, and even execute joint operations mixing local rescuers with intimate knowledge of the neighborhoods with specialized technical personnel from FEMA and other agencies.

Tuesday, August 30

By the morning of August 30[th], the true consequence of the storm and the flooding of New Orleans became widely understood. Media reports and cable news video made the desperation of the situation clear to everyone. Updated reporting from the Homeland Security Operations Center revised the previous day's denial of levee breaches to confirm that catastrophic flooding was taking place in New Orleans East and the Ninth Ward neighborhoods of the Crescent City.[499]

Emergency Management

Officials across the Federal Government urgently stepped-up their efforts to respond to a situation that was far more serious than they initially believed. However, by waiting to undertake specific strategic actions until the storm had already struck, DHS

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[497] Ibid. 69.
[498] Ibid. 69.
[499] Cooper and Block, *Disaster: Hurricane Katrina and the Failure of Homeland Security*, 132-151.

lost critical opportunities to collaborate prior to the storm's arrival. Secretary Chertoff activated the Interagency Incident Management Group, a committee of senior federal departmental officials responsible for anticipating the needs of a major incident, at 11:30am on August, 30[th]. The delayed activation of the Interagency Incident Management Group precluded DHS from engaging other federal departments and agencies in pre-crisis preparations through that particular venue. That same day, Secretary Chertoff declared Katrina an Incident of National Significance and named Michael Brown, the Director of FEMA, as the Principal Federal Official in charge of response and recovery operations for Hurricane Katrina. The absence of a designated Principal Federal Official prior to the storm's onset forfeited a crucial opportunity to form a stable team to lead collaborative efforts in the storm's wake.

At the operational level, FEMA began to establish a more robust presence in New Orleans. A FEMA advance team arrived at the Superdome and was tasked to establish a unified command.[500] Yet, FEMA's collaborative performance was already beginning to crack under the strain of events. The Federal Coordinating Officer in Louisiana, William Lokey, confided in Michael Brown on Tuesday afternoon that the disaster was simply too big for FEMA to manage and encouraged him to outsource logistics operations to the Department of Defense. Brown later recalled, "I remember the discussion clearly. I remember seeing panic in his eyes. I could just see it in his eyes."[501]

As FEMA could not establish a unified command in Louisiana, state and local officials were regularly bypassing FEMA and submitting requests directly to federal

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[500] "DHS/FEMA Initial Response Hotwash: Hurricane Katrina in Louisiana, Dr-1603-LA," 79.
[501] Cooper and Block, *Disaster: Hurricane Katrina and the Failure of Homeland Security*, 166.

departments and agencies.[502] In fact, in some cases FEMA's own staff began to abandon internal and external processes and coordination procedures as a result of communications outages, urgency, and frustration with FEMA's responsiveness.[503] This activity was both cause *and* consequence of FEMA's declining collaborative performance as the crisis expanded.

By Tuesday morning, the Department of Defense was sufficiently exasperated with the lack of information and mission assignments coming from FEMA that Department of Defense commanders were instructed by departmental leadership to undertake missions they deemed worthy irrespective of governmental coordination processes managed by FEMA.[504] Collaboration problems with the Department of Defense included a weak understanding among FEMA staff of Department of Defense capabilities, a lengthy approval process employed by the Department of Defense to consider FEMA mission assignments in the early hours of the crisis, and a lack of trust among Department of Defense staff for the reporting and requests generated by FEMA.[505]

FEMA Director Michael Brown was largely unreachable for much of the day after the storm. Although Secretary Chertoff and other leaders would see him giving interviews on television, they could not get him on the phone. Brown largely failed to communicate the facts on the ground to senior leaders directly or through reporting to the Homeland Security Operations Center.[506] When Secretary Chertoff finally tracked Brown down, he ordered him to stand-fast in Baton Rouge, effectively sidelining him. The effect

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[502] "A Failure of Initiative," 190.
[503] Ibid. 190.
[504] "Hurricane Katrina: A Nation Still Unprepared," 475.
[505] Ibid. 482.
[506] Cooper and Block, *Disaster: Hurricane Katrina and the Failure of Homeland Security*, 170.

of this public rebuke was actually to make Brown less communicative rather than more so.

State Government in Mississippi and Alabama rushed to assess damage to coastal communities as affected local governments were generally overwhelmed.[507] State and local governments in coastal Louisiana were in varying states of disarray. Municipal Government in New Orleans was struggling to reconstitute itself in the wake of the day's events. In a desperate act to address pressing need, Mayor Nagin opened the New Orleans Convention Center as a refuge of last resort.[508]

Search and Rescue

Within 24 hours of the storm's passage, all pre-positioned Coast Guard aircraft began conducting search and rescue missions, damage assessments, and logistics support activities.[509] Air asset command and control was established at Air Station New Orleans.[510] However, significant communications problems only allowed aircrews to receive coordinated mission assignments from the command center when they landed to refuel.[511] In fact, Coast Guard aircraft could only communicate aircraft-to-aircraft, with the National Guard Task Force-Eagle air command at the Superdome, and only occasionally with Air Station New Orleans.[512]

The scope and scale of the rescue operation was daunting. The Coast Guard shifted nearly half of its national fleet of helicopters to the disaster zone and FEMA ordered up an additional 16 urban search and rescue teams and another 10 a day later to

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[507] "Hurricane Katrina: A Nation Still Unprepared."
[508] Ibid. 69.
[509] "A Failure of Initiative," 214.
[510] Ibid. 214.
[511] Ibid. 214.
[512] Ibid. 214.

supplement its modest pre-landfall deployment.[513] The standardization of training,

procedures, and equipment across the Coast Guard facilitated communication among

crew members and units from different parts of the country.[514]

Figure 12: The unified command at Zephyr Field[515]

After the first 48 hours, surface operations were being commanded out of a local

professional baseball stadium, Zephyr Field. The Coast Guard successfully established a

unified command with FEMA and Wildlife and Fisheries.[516] However, air operations

remained largely uncoordinated.

In the initial 48 hours of the response, the Coast Guard and other rescuers resorted

to rescuing those in immediate danger and unloading survivors at the nearest patch of dry

land in order to conserve time and fuel. By the end of the second day of rescue

operations, the Coast Guard had identified central drop-off locations and begun to

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[513] "Hurricane Katrina: A Nation Still Unprepared," 333-334.
[514] "A Failure of Initiative," 215.
[515] "Hurricane Katrina: A Nation Still Unprepared," 187.
[516] "A Failure of Initiative," 216.

coordinate with FEMA to ensure that survivors received provisions and further evacuation assistance.[517] Despite these efforts, many survivors were left for extended periods without relief or evacuation.

The search and rescue missions in Mississippi presented far more manageable challenges. Although the scope of the affected area was vast, the capabilities of first responders on the ground were not significantly degraded and there was no urban flooding like that being experienced in New Orleans. As a result of these factors and the prompt establishment of a unified command, search and rescue operations were completed within 36 hours of landfall.[518]

Wednesday, August 31

Conditions in New Orleans were increasingly deplorable as time passed, supplies dwindled, and the security situation deteriorated.[519] The City of New Orleans was in desperate need of food and water, reliable communications, and buses to evacuate the Superdome.[520] As FEMA proved unable to meet these needs, state, local, and even other federal officials increasingly turned to other channels. Officials on the ground continued to circumvent established protocols and coordination processes to request relief directly from the Department of Defense and other states including, most notably, Florida and Texas.[521]

Emergency Management

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[517] Ibid, 216.
[518] "Coast Guard: Observations on the Preparation, Response, and Recovery Missions Related to Hurricane Katrina," 21.
[519] "Mayor: Katrina May Have Killed Thousands," *Associated Press*, August 31, 2005.
[520] Cooper and Block, *Disaster: Hurricane Katrina and the Failure of Homeland Security*, 172.
[521] Ibid. 190.

President Bush outlined the Federal Government's response to the unfolding disaster in the Gulf Coast with a bureaucratic listing of the Federal Government's activities without recognizing the utter inadequacy of the response operation to date.[522] At 1:30am, FEMA finally tasked the Department of Transportation to contract buses to evacuate the Superdome.[523] The first federal buses did not arrive at the Superdome until 10am the next morning.[524] FEMA began to restore critical communications links, deploying four satellite communications trucks at the Superdome, Covington, Baton Rouge, and the State of Louisiana Emergency Operations Center.[525]

At the Department of Defense , the Acting Deputy Secretary of Defense ordered the U.S. Northern Command to provide military assistance and designated Lieutenant General Russel Honore to Command Joint Task Force Katrina (JTF-Katrina) and lead the active duty military's response to the disaster, in coordination with FEMA and the National Guard. He arrived in Louisiana one day later and formed a second command separate and distinct from the overwhelmed officials in Baton Rouge.[526]

The Louisiana State Emergency Operations Center was struggling to cope with the magnitude of the crisis. In a telling admission of the State's lack of familiarity with National Incident Management System and the National Response Plan, the state hired contractors to provide on-site "crash-courses" on incident command and the National Response Plan.[527]

Search and Rescue

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[522] "President Outlines Hurricane Katrina Relief Efforts," The White House, http://georgewbush-whitehouse.archives.gov/news/releases/2005/08/20050831-3.html. Accessed April 3 2012.
[523] "Hurricane Katrina: A Nation Still Unprepared.", 70
[524] Ibid, 70.
[525] "DHS/FEMA Initial Response Hotwash: Hurricane Katrina in Louisiana, Dr-1603-LA," 80.
[526] "A Failure of Initiative," 213.
[527] "DHS/FEMA Initial Response Hotwash: Hurricane Katrina in Louisiana, Dr-1603-LA," 80.

Forty-eight hours after the storm, many thousands of the storm's victims continued to await rescue. On August 31[st], a Coast Guard liaison officer arrived at Task Force-Eagle, the National Guard Air Command at the Superdome, to better coordinate air operations.[528] Due to massive communications failures and a variety of other factors, search and rescue operations were run with "virtually every federal, state, and local agency conducting independent operation[s]."[529] As a result, evacuees were effectively abandoned, often without food and water, on highway overpasses or at overcrowded facilities. The lack of coordination exacerbated the suffering of the rescued, delayed the retrieval of many, and almost certainly resulted in unnecessary fatalities as whole neighborhoods were overlooked by rescuers for several days.[530] By this point, fifteen FEMA urban search and rescue teams were contributing to the rescue effort in New Orleans.[531]

Thursday, September 1

Growing concerns about the security situation in New Orleans came to a head 72 hours after the storm's landfall. Mayor Nagin made the frantic circumstance plain for all to hear, pleading, "This is a desperate 'S.O.S.' Right now we are out of resources at the Convention Center and don't anticipate enough buses. We need buses. Currently the Convention Center is unsanitary and unsafe and we're running out of supplies."[532]

Federal officials and National Guard units retreated from the Superdome early in the morning and search and rescue operations were halted by various agencies in light of

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[528] "A Failure of Initiative," 216.
[529] Cooper and Block, *Disaster: Hurricane Katrina and the Failure of Homeland Security*, 181.
[530] Cooper and Block describe the coordination failures of the search and rescue effort in significant detail. Ibid. 181.
[531] "DHS/FEMA Initial Response Hotwash: Hurricane Katrina in Louisiana, Dr-1603-LA," 80.
[532] Julian Borger, "Mayor Issues SOS as Chaos Tightens Its Grip," *The Guardian*, September 1, 2005.

unconfirmed reports of hostile gunmen in the city.[533] Later investigation would reveal

that much of the media reporting underlying these perceptions was inaccurate, but the

effect on the response effort was undeniable: security was now the overriding priority and

most other activities would be scaled back until rescuers' safety could be guaranteed

anew. By noon, FEMA had completely withdrawn from the City of New Orleans.[534] To

make matters worse, the previous day's small crowd of evacuees at the Convention

Center had grown to an estimated 20,000 individuals, and unsubstantiated reports of

armed gangs and wanton violence forced officials to precede the delivery of aid with a

security operation led by the National Guard.[535] Three days after the storm, over 750,000

households across the region remained without power.[536]

Emergency Management

      Days into the response, FEMA still lacked a unified command in the form of a

Joint Field Office in Louisiana. Instead, a small contingent of senior federal officials

worked alongside Louisiana state officials in the State Emergency Operations Center

while the bulk of FEMA's emergency management staff were housed in a vast warehouse

separate from the Emergency Operations Center. This state of affairs complicated

coordination, information sharing, and collaborative operations in the field. At the same

time, command and control operations in neighboring states were improving. For

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[533] Cooper and Block, *Disaster: Hurricane Katrina and the Failure of Homeland Security*, 196-197.
[534] Ibid. 197.
[535] Ibid. 198-199.
[536] "DHS/FEMA Initial Response Hotwash: Hurricane Katrina in Louisiana, Dr-1603-LA," 80.

example, FEMA successfully established an integrated Joint Field Office in Montgomery, Alabama.[537]

By September 1st, FEMA had deployed more than 57 National Disaster Medical System teams to the Gulf Coast.[538] However, FEMA field personnel were increasingly vulnerable as a result of the deteriorating security situation and the absence of force protection elements in FEMA's deployment plans. As a result, FEMA teams withdrew from the Superdome and other frontline locations even as the agency was surging personnel into the greater region. FEMA's abrupt withdrawals further undermined the capacity of field staff to cultivate trust and accountability with partner organizations. For example, when FEMA Disaster Medical Assistance Team staff returned to the Superdome after their second withdrawal in three days, Brigadier General Gary Jones of the Louisiana National Guard could barely contain his contempt for the perceived fecklessness of FEMA's field staff. He recounts a colorful conversation with the leader of one of FEMA's Disaster Medical Assistance Teams:

> The FEMA team leader came back and she said we're back, and this is so-and-so, and he's going to be the lead guy. And I said, "Are you going to stay this time?" And they said, "Oh, yeah, we're going to stay." And I said, "Well, good, because I would hate to have to shoot somebody." And they laughed and they said, "You're joking." And I said, "Think so?" You know, and I – and I was joking. Obviously, I mean, I wasn't going to shoot anybody. But I kind of voiced my displeasure with the fact that they had left me unsupported.[539]

Search and Rescue

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[537] "A Performance Review of FEMA's Disaster Management Activities in Response to Hurricane Katrina," 147.
[538] "A Failure of Initiative," 59.
[539] "Hurricane Katrina: A Nation Still Unprepared," 406.

The Coast Guard transferred command of surface activities from Zephyr Field to the Coast Guard Cutter SPENCER, which had just arrived on station.[540] The SPENCER offered advanced communications capabilities and permitted improved coordination. FEMA and state agencies from across the country were contributing an increasing number of field teams to the search and rescue effort. By September 1[st], FEMA had deployed 28 urban search and rescue Teams to the Gulf Coast.[541]

Yet, coordination remained problematic. Despite the fact that Department of Defense assets operated under the coordination of Coast Guard District Eight from August 30-31[st], there is significant evidence that military search and rescue units operating under Joint Task Force-Katrina were not collaborating closely with the Coast Guard, Wildlife and Fisheries, and other rescue agencies. For example, Joint Task Force-Katrina independently developed an ad hoc grid reference system to organize its response even though other responders were already using a common grid reference system designated by the U.S. National Search and Rescue Supplement.[542] Similarly, the House Report assesses that, "Coordination was poor because no overarching command existed to assign search sectors, communicate with all assets, or direct aircraft to respond to distress calls."[543]

In fact, command and control of military assets in the Gulf Coast Region was distributed, complex, and extremely dynamic. The House Report on Hurricane Katrina provides a poignant glimpse into the rapidly shifting efforts to impose order on the military search and rescue response:

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[540] "A Failure of Initiative," 216.
[541] Ibid. 59.
[542] "Hurricane Katrina: A Nation Still Unprepared," 345.
[543] Ibid. 346.

From Tuesday, August 30, to Wednesday, August 31, DOD air assets operated with Coast Guard aircraft under the coordination of Coast Guard District Eight. Beginning Wednesday, August 31, all DOD air assets were controlled by Admiral Kilkenny, based on USS Bataan. Beginning Wednesday, August 31, Army search and rescue assets reported to the Louisiana National Guard, stationed at Eagle Base at the Superdome. Beginning late in the week, Air Force and other shore-based search and rescue assets reported to the Joint Force Air Component Commander, who arrived at Camp Shelby, Mississippi, on Thursday, September 1. On Saturday, September 3, Air Force Brigadier General Harold Moulton arrived from NORTHCOM to consolidate command and control of all Title 10 search and rescue units from a mobile headquarters unit at Naval Air Station Joint Reserve Base in Belle Chasse. Meanwhile, the National Guard established their search and rescue coordination headquarters at Zephyr Field.[544]

Command authorities changed rapidly and airborne and surface units, even those within the same organization, often reported to different commands. These chaotic efforts to establish coherent command and control, just among the military units in the region, betray a lack of common institutions, plans, and doctrine. The result was a coordination quagmire and poor collaborative performance.

Friday, September 2

Just as the situation at the Superdome was beginning to stabilize with the ongoing evacuation and arrival of rations from the National Guard, the realities of the situation at the Convention Center were coming in to fuller view. Despite the fact that the Convention Center had been functioning as a de facto shelter for days, the Homeland Security Operations Center only confirmed the presence of survivors on September 2nd. Although the Homeland Security Operations Center was reporting a crowd of perhaps 1,000 individuals at the Convention Center, reliable eyewitness reports suggested that more than 25,000 people had congregated there by Friday morning.[545] Over 1,000 National Guard troops supported by 250 New Orleans police officers overtook the Convention Center to discover a peaceful crowd and no evidence to support the previous

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[544] Ibid. 346-347.
[545] Cooper and Block, *Disaster: Hurricane Katrina and the Failure of Homeland Security*, 209.

days' reports of armed thugs and atrocities.[546] Within a day's time, the entire Convention Center was evacuated.

Emergency Management

President Bush met with Mayor Nagin of New Orleans and the governors of Louisiana, Alabama, and Mississippi aboard Air Force One. President Bush pressed Governor Blanco to place National Guard troops under a unified federal command headed by General Honore. Governor Blanco refused to cede control of the National Guard despite a number of creative proposals from the White House.[547] In order to accelerate the evacuation of survivors from the region, President Bush began issuing the first of what would ultimately become an unprecedented 52 disaster evacuation declarations to support communities around the country with costs related to evacuee assistance.[548]

As the State Government in Louisiana became increasingly overwhelmed, FEMA attempted to reach out directly to local officials. The Federal Coordinating Officer in Louisiana established Parish Liaison Teams and deployed them to the hardest hit parishes.[549] In Louisiana alone, 248 shelters were housing over 62,000 persons.[550]

FEMA maintained eight Disaster Medical Assistance Teams and three medical strike teams in the vicinity of New Orleans to support ongoing operations.[551] Although the Department of Health and Human Services was primarily responsible for coordinating the provision of medical care in Katrina's wake, officials at FEMA

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[546] Ibid. 210-211.
[547] Ibid. 218-220.
[548] "A Performance Review of FEMA's Disaster Management Activities in Response to Hurricane Katrina," 147.
[549] "DHS/FEMA Initial Response Hotwash: Hurricane Katrina in Louisiana, Dr-1603-LA," 81.
[550] Ibid. 81.
[551] Ibid. 81.

contested the role of Health and Human Services as lead agency. FEMA controlled

National Disaster Medical System teams, possessed a fuller view of needs on the ground,

and neglected to share information regarding deployments and needs with Health and

Human Services, much less integrate Health and Human Services public health service

officers into the deployment plan. Institutional weaknesses at Health and Human

Services, including the staffing, equipping, and personnel policies of the 6,000 person-

strong, Health and Human Services -administered U.S. Public Health Service Officer

Corps contributed to this poor collaborative performance.[552] The failure of Health and

Human Services to participate in pre-crisis exercises including Hurricane Pam is further

evidence of a lack of preparedness for crisis collaboration.[553] As a result, a unified

command for medical operations would not be established until September 5[th]. In effect,

coordination was not achieved until September 5[th] and collaboration among Health and

Human Services, Department of Defense , and FEMA was largely non-existent.[554] In

coming days, FEMA would begin the transition from rescue operations to recovery

operations with the formation of a Disaster Mortuary Response Task Force to coordinate

body recovery. Ultimately, political disagreements between federal and state officials

would completely undermine the capacity of the Disaster Mortuary Response Teams to

execute their operational responsibilities.[555]

Search and Rescue

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[552] "Hurricane Katrina: A Nation Still Unprepared," 414.
[553] Ibid. 423.
[554] This is not to suggest conclusively that federal providers did not collaborate directly with state/local providers in the field. Evidence reviewed indicates instances of integrated collaboration but does not support the notion that collaboration was systemic or widespread.
[555] "DHS/FEMA Initial Response Hotwash: Hurricane Katrina in Louisiana, Dr-1603-LA."

Search and rescue operations were ongoing in the New Orleans region on September 2nd. As the pace of rescues slowed, search and rescue operations became better coordinated and more deliberate. On September 3rd, the Coast Guard transferred command and control for search and rescue operations to the Joint Field Office in Louisiana.[556] By September 5th, general search and rescue was completed in New Orleans and more detailed search and rescue began.[557] General Moulton developed a plan, "to integrate the numerous agencies and their hundreds of assets, operating across the air, ground, littoral, and urban environments."[558] The search and rescue effort was finally able to initiate a thorough and efficient search of the area using a common strategy and shared communications network. Existing search and rescue assets were complemented by hefty contingents of National Guard and active-duty troops to complete door-to-door searches. As the pace of rescues continued to dissipate, search and rescue operations expanded to outlying parishes on September 12th.[559] By September 15th, primary searches of Jefferson, Orleans, and St. Bernard Parishes were complete.[560] The final recorded rescue related to Hurricane Katrina occurred on September 16th.[561]

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[556] "A Failure of Initiative," 216.
[557] "DHS/FEMA Initial Response Hotwash: Hurricane Katrina in Louisiana, Dr-1603-LA," 82.
[558] "Hurricane Katrina: A Nation Still Unprepared," 347.
[559] "DHS/FEMA Initial Response Hotwash: Hurricane Katrina in Louisiana, Dr-1603-LA," 82, 85.
[560] Ibid. 86.
[561] "Coast Guard: Observations on the Preparation, Response, and Recovery Missions Related to Hurricane Katrina," 18-19.

Chapter 4: Explaining Collaborative Performance in the Aftermath of Hurricane Katrina

"Pandemonium did not reign. It poured."[562]
John Kendrick Bangs, American author and satirist

This chapter applies the theoretical framework developed in chapter two to explore why the collaborative performance of the Coast Guard and FEMA in the aftermath of Hurricane Katrina did not conform to expectations. This discussion features a structured analysis of the summary and situational variables identified in the framework. The final chapter draws on this analysis to conduct within-case and cross-case comparisons. This chapter begins with an analysis of inter-organizational factors before examining intergovernmental considerations.

Inter-organizational Factors

This section will provide a descriptive analysis of each summary variable in this case for the Coast Guard and FEMA, respectively. It will also trace the relationships between and among the variables in order to facilitate the investigation of causal mechanisms and permit the construction of an empirically derived model of crisis collaboration.

Coast Guard

Inter-organizational power dynamics

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[562] "A Failure of Initiative."

Analysis of the Coast Guard's sources of power and organizational ability to support collaboration suggests that inter-organizational power dynamics favored high collaborative performance. The Coast Guard maintains clear authorities that align with the goals of peer organizations involved in Hurricane Katrina, such as Wildlife and Fisheries. Critically, collaborative activities did not present a bureaucratic threat to the Coast Guard power base. Furthermore, the Coast Guard maintained sufficient political support, funding and assets related specifically to search and rescue, trained staff, and surge capacity to support robust collaborative activities.

Shared goals

The Coast Guard's guardian ethos drives its strategic and operational goal setting. Whether the relevant missions involve safety, stewardship, or security, the Coast Guard casts itself as guardian of life, property, and shared resources. In the context of Hurricane Katrina, the Coast Guard's goals, both before the storm and in its aftermath, were to reduce loss of life through expeditious search and rescue operations and to prevent and respond to hazardous materials incidents. These missions were formally delegated to the Coast Guard in the National Response Plan, the Federal Government's playbook for domestic incident management, and designated the Coast Guard as the lead federal agency for oil and hazardous materials response and a supporting agency for urban search and rescue.

Unsurprisingly, the Coast Guard shared an overarching common goal with all of its partner agencies in the domain of search and rescue operations. The Coast Guard, Louisiana National Guard, FEMA, Wildlife and Fisheries, New Orleans Police Department, New Orleans Fire Department, and others prioritized the rescue of survivors

above all other activities. In the wake of the storm, the lifesaving imperative overpowered traditional impediments to interorganizational collaboration, such as organizational rivalries. This research uncovered no evidence to suggest that search and rescue operations were delayed or encumbered by competing goals and objectives after the storm struck.

Authorities

The Coast Guard was established by the "Act to Create the Coast Guard" on January 28, 1915.[563] However, its organizational history stretches back to 1789 and one of the first acts of the Congress under the Constitution. In fact, the principal legacy agency of the Coast Guard, the Revenue Cutter Service, is the nation's oldest maritime agency, predating the founding of the U.S. Navy by eight years. Since, 1789, the Coast Guard gradually accumulated responsibilities, authorities, and resources to establish itself as a unique civil-military maritime organization. The Coast Guard traces its roots back to five federal agencies: the Revenue Cutter Service, Lighthouse Service, Steamboat Inspection Service, the Bureau of Navigation, and the Lifesaving Service.[564] The formal establishment of the Coast Guard in 1915 merged the Revenue Cutter Service and the Lifesaving Service into the new organization and gradually absorbed the responsibilities and resources of the remaining maritime services over the course of the ensuing three decades.[565] Since 1915, the Coast Guard has served under the U.S. Navy during times of

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[563] "Coast Guard History: Frequently Asked Questions," http://www.uscg.mil/history/faqs/district.asp. Accessed March 28, 2011.
[564] Tom Beard, Jose Hanson, and Paul C. Scotti, eds., *The Coast Guard* (Seatttle, WA: Hugh Lauter Levin Associates,2004), 99.
[565] The Lighthouse Service became part of the Coast Guard in 1939 and the Bureau of Marine Inspection and Navigation at the Treasury Department followed permanently in 1946. "U.S. Coast Guard Missions Timeline," (U.S. Coast Guard History Program).

war and within the Treasury, Transportation, and Homeland Security Departments during peacetime.

The complicated and lengthy legislative history of the Coast Guard has bestowed the agency with an unusually broad mandate. The Coast Guard bridges the national security, law enforcement, and regulatory domains.[566] Today, the Coast Guard is responsible for 11 types of missions, listed in order of the current percentage of the Coast Guard budget devoted to them:[567]

1. Ports, waterways, and coastal security;
2. Drug interdiction;
3. Aids to navigation;
4. Search and rescue;
5. Living marine resources;
6. Marine safety;
7. Defense readiness;
8. Migrant interdiction;
9. Marine environmental protection;
10. Ice operations; and
11. Other law enforcement.

The Coast Guard has organized these missions into three overlapping domains: safety, security, and stewardship. The roots of the safety mission set can be traced to the establishment of the Lighthouse Service in 1789, the security mission set to the establishment of the Revenue Cutter Service in 1790 to enforce customs laws, and the stewardship mission set to the Timber Reserve Act of 1822, which tasked the Coast Guard with the preservation of timberlands as a strategic asset for the U.S. Navy. Each of these missions has since been amended and expanded by significant acts of legislation that are too numerous to describe in detail.

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[566] Stephen Flynn, "Homeland Security Is a Coast Guard Mission," *U.S. Naval Institute Proceedings* 127, October (2001).

[567] "USCG Missions," U.S. Coast Guard, http://www.uscg.mil/top/missions/. Accessed May 28, 2012.

Figure 13: The Coast Guard Mission Portfolio[568]

In order to fulfill these missions, the Coast Guard has been granted a unique combination of authorities. First, the Coast Guard is a civil-military organization. It is a full-fledged military service that is also authorized to conduct law enforcement operations. The first Commandant of the Coast Guard, Captain-Commandant Ellsworth Price Bertholf, described the value of the Coast Guard's military structure to its civil-military responsibilities, explaining in 1915 that,

> "More than 120 years of practical experience has demonstrated that it is by means of military drills, training, and discipline that the service is enabled to maintain that state of preparedness for the prompt performance of its most important civil duties, which...are largely of an emergent nature." [569]

The Coast Guard is able to leverage the benefits of military organization, command and control authority over its personnel, and its national-level jurisdiction, to counter transnational threats and manage domestic incidents.

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[568] "U.S. Coast Guard: America's Maritime Guardian."
[569] "Annual Report of the U.S. Coast Guard for the Fiscal Year Ended June 30, 1915," (Washington, DC: U.S. Government Printing Office, 1915).

Second, the Coast Guard's authority under federal law to carry out maritime operations is continuous.[570] Unlike agencies such as FEMA, the Coast Guard is not dependent on Stafford Act declarations or specific events in order to execute its operational authorities. Members of the Coast Guard operate on a routine basis alongside the same partners that they work with during crises. As a result, they benefit from opportunities to develop local knowledge and relationships that would otherwise be unavailable to them.

Third, in order to execute its missions, the Coast Guard is required to develop and maintain ongoing relationships with other federal agencies, the military services, international partners, state and local governments, members of the private sector, and the general public. Decades of experience collaborating with partners at all levels of the organization have led some commentators to conclude that the core competence of the Coast Guard is not maritime operations but collaboration in complex, life-threatening, and time-sensitive environments.[571]

The evidence available suggests that the Coast Guard's statutory authorities to prepare for and respond to Hurricane Katrina were sufficient. This research uncovered no adverse indications related to authorities in the operational record or specific calls for significant amendment to Coast Guard authorities prior to or in the aftermath of Hurricane Katrina.

It is important to note, however, that a key element of the Coast Guard's ability to leverage its authorities lies in its aggressive interpretation of legislative statutes. Former

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[570] "Coast Guard: Observations on the Preparation, Response, and Recovery Missions Related to Hurricane Katrina," 6.
[571] Stephen Flynn, *The Edge of Disaster: Rebuilding a Resilient Nation* (New York: Random House, 2007), 129.

Commandant Thad Allen underscored the Coast Guard's embrace of pragmatism and initiative in domestic incident management in a world of uncertainties observing that, "you are always going to have a gap between the laws that are being executed, the funding sources provided to execute those laws, and the public expectation."[572] In fact, the Coast Guard regularly interprets the strictures of the law rather liberally in order to improve its ability to leverage its limited resources to accomplish its missions.

Funding and assets

Historically, the Coast Guard has faced chronic funding shortages. Relative to the other armed services, the budget authority of the Coast Guard is decidedly small. Unlike the rest of the military services, the Coast Guard is funded in the transportation section of the budget instead of the national security section.[573] However, the consequences of the apparent mismatch between Coast Guard mission responsibilities and resourcing have been both positive and negative.

Over time, the Coast Guard has learned to mitigate the effects of sparse funding by investing in relatively low-cost multi-mission platforms to perform a variety of civil-military missions.[574] The Coast Guard invests strategically to develop and maintain the workforce and capabilities required by its many missions.

Second, the Coast Guard has developed an institutional reliance on partnerships to carry out its missions. Where necessary, the Coast Guard has developed creative partnerships to combine Coast Guard authorities and capabilities with the resources of other partners, like the U.S. Navy, to carry out missions that it would not be able to

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[572] Thad Allen, "Unprecedented Events, Unprecedented Leadership Challenges," http://www.youtube.com/watch?v=a4pFfhqAcOQ. Accessed January 5, 2013.
[573] Thomas P. Ostrom, *The United States Coast Guard: 1790 to the Present* (Oakland, Oregon: Red Anvil Press, 2006).
[574] Flynn, "Homeland Security Is a Coast Guard Mission."

conduct alone as a result of resource limitations. For example, the Coast Guard embeds

officers on U.S. Navy vessels to endow them with law enforcement authority.[575] When

engaging in drug interdiction operations, the U.S. Navy vessel will lower the U.S. Navy

flag and raise the Coast Guard flag and temporarily serve as a Coast Guard vessel until

the interdiction is complete. Creative solutions such as these are not the exception but

rather the rule in the execution of Coast Guard missions.

However, funding shortfalls have also eroded the capabilities of the service in

specific areas, such as "blue water operations." Major assets, like the high endurance

cutters used in off-shore operations, have had their service lives extended well-beyond

design specifications in order to preserve funding for cheaper multi-mission platforms.

As a result, the Coast Guard has come to rely on ambitious recapitalization programs to

reconstitute capabilities that are in severe danger of failing altogether short of dramatic

action. The Coast Guard has, in turn, struggled to manage massive acquisition projects

such as the troubled Deepwater Program.[576]

In the years prior to Hurricane Katrina, Coast Guard funding grew substantially as

the Coast Guard was absorbed into the DHS. The Coast Guard fiscal year 2004 budget

was $6.8 billion, an increase of $615 million (10%) over its 2003 allocation.[577] Much of

this increased funding was the result of the Bush Administration's enthusiasm for border

security and counterterrorism programs in the aftermath of the September 11, 2001

attacks.

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[575] "U.S. Coast Guard: America's Maritime Guardian."
[576] The management shortcomings of the Coast Guard with respect to the Deepwater Program are extensively documented in a litany of reports produced by the executive and legislative branches.
[577] "Department of Homeland Security Fiscal Year 2004 Budget in Brief," (Washington, DC: Department of Homeland Security, 2004).

As a result, the Coast Guard experienced funding growth that allowed it to expand its capabilities in the years preceding Hurricane Katrina in most of its mission areas. The Coast Guard was particularly active in the Gulf Coast Region, holding its own hurricane exercises and participating actively in the Hurricane Pam exercise and other regional planning initiatives. Moreover, the specific search and rescue capabilities stressed by the Hurricane Katrina response operation were particularly well-resourced. The mission areas that the Coast Guard did not prioritize, namely blue water operations, were inconsequential in the operations following Katrina. In summary, the Coast Guard was conditioned to manage its resources strategically and efficiently and experienced a relative windfall prior to Hurricane Katrina. As a result, the agency was well-prepared to collaborate with partners.

Staffing

In 2005, the Coast Guard consisted of 39,000 active duty personnel and 7,000 civilians.[578] Relative to the other military services, this number is anemic. However, relative to FEMA, with 2,250 personnel in 2005, and other federal law enforcement entities, such as the FBI with approximately 13,000 special agents, the Coast Guard constitutes a substantial force-in-standing. Of course, the Coast Guard active duty roster is complemented by two additional categories of personnel.

Figure 14: Distribution of Coast Guard personnel by category

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[578] Coast Guard personnel figures from 2005 were derived from: "Coast Guard: Observations on the Preparation, Response, and Recovery Missions Related to Hurricane Katrina," 8.

40000
35000
30000
25000
20000
15000
10000
5000
0

Active Duty   Reserve   Auxiliary
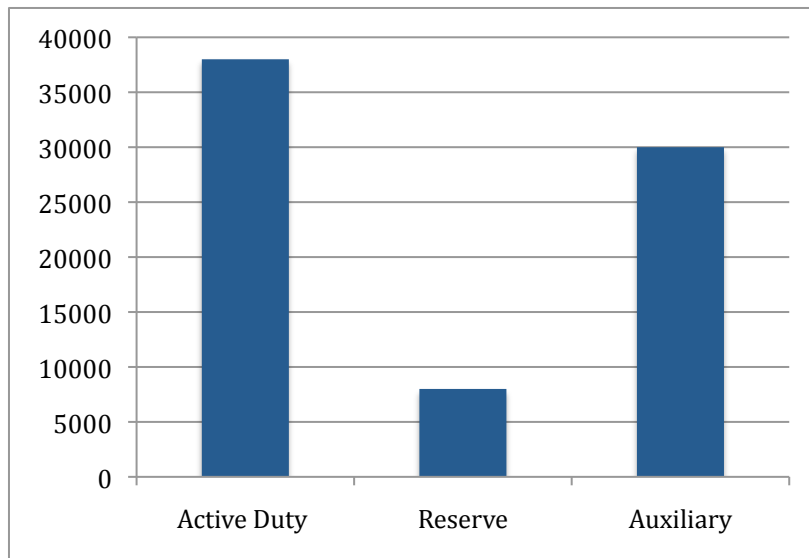
In 2005, the Coast Guard Reserve included approximately 8,100 specially trained members who serve the Coast Guard one weekend per month and two weeks per year, much like members of the National Guard. Reservists work alongside active duty personnel. The Coast Guard Auxiliary consists of nearly 31,000 members and assists the Coast Guard in non-law enforcement programs including community outreach, search and rescue, and marine environmental protection.

Significantly, the ability of the Coast Guard to surge its personnel in the event of catastrophic events is well developed. The Coast Guard had 2,045 personnel stationed in Alabama, Mississippi, and Louisiana in advance of the storm. As the storm approached the Gulf Coast, the Coast Guard surged an additional 1,981 active duty personnel, 733 civilians, 541 reservists, and 305 auxiliarists to the Gulf Coast Region.[579] This contingent increased the Coast Guard's manpower in the region by nearly 175%. The organizational structures and processes that facilitated this surge will be discussed in greater detail in the following pages.

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[579] Ibid., 8

Political support

In recent years, the Coast Guard has enjoyed sustained and bipartisan support. Leaders in the executive and legislative branches agree on the necessity of the Coast Guard and the significance of the missions it carries out. As the preceding narrative attests, Coast Guard operations in the aftermath of Hurricane Katrina were unencumbered by political recriminations.

However, this is not to suggest that the Coast Guard is a particularly powerful bureaucratic player. Prior to the beginnings of the Cold War, the Coast Guard struggled to justify its existence in the face of repeated attempts to abolish its component parts. Although few would dispute the necessity of the modern Coast Guard, the agency's relative political weakness is evidenced in its transfer to the DHS in 2002. Further, the Coast Guard has generally not been as successful as other organizations, such as the U.S. Navy in securing funding and accruing an expansive asset base.

Organizational structure
Figure 15: The organizational history of the Coast Guard (original)
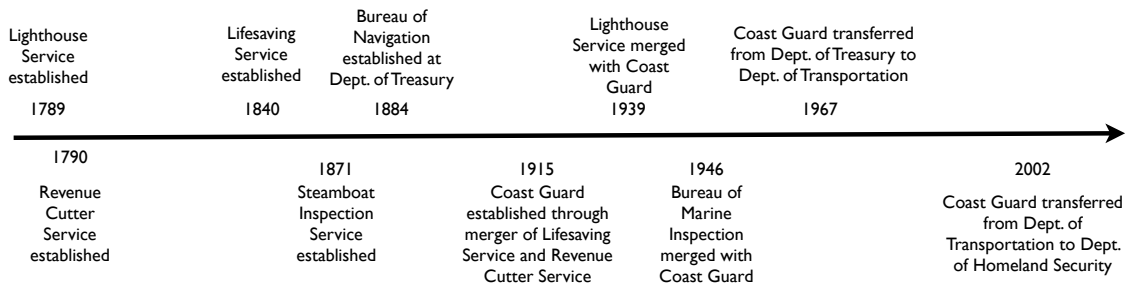
Over the course of its history, the Revenue Cutter Service, the principal predecessor service to the modern Coast Guard, has accumulated military roles, lifesaving missions, maritime environmental stewardship mandates, law enforcement responsibilities, and commercial responsibilities. In the process, the Revenue Cutter

Service absorbed smaller legacy services including the Lighthouse Service, Lifesaving Service, Steamboat Inspection Service, Bureau of Navigation, and the Bureau of Marine Inspection and was transferred from the Department of the Treasury to the Department of Transportation and, most recently, to DHS.

Unlike the U.S. Navy, the Coast Guard has not wielded the political strength to resist taking on new missions peripheral to its leadership's preferences. Indeed, the U.S. Navy repeatedly deflected political pressure assume domestic maritime missions by deferring to the Coast Guard.[580] The Coast Guard has often adopted new missions, such as northern ice patrols in the wake of the Titanic disaster, in order to ensure its independent survival, expand and diversify its domestic constituencies, and preserve its resource base. In short, the Coast Guard has survived by performing missions the U.S. Navy has sought to avoid and transforming itself into a "systems integrator" for the nation's smaller maritime agencies. The Coast Guard has thrived in this crowded and unstable bureaucratic mission space by developing institutions, systems, and a culture that bridge organizational and disciplinary divides that other agencies are unable or unwilling to cross.

Much of this success is attributable to the hierarchical but decentralized organizational structure of the Coast Guard, which has remained constant since the establishment of the Coast Guard in 1915. The Commandant of the Coast Guard (Commandant) serves under a civilian departmental secretary and presides over a headquarters operation and a system of field units. Coast Guard headquarters determines policy and provides the full spectrum of support services to the field organizations

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[580] For example, the Coast Guard was directed to relay Voice of America broadcasts to Soviet controlled Eastern Europe beginning in 1952. Ostrom, *The United States Coast Guard: 1790 to the Present*, 84.

including acquisitions management, technical services, human resources, etc. Field units were initially organized into one of six districts. In 2005, the field units were organized into the Atlantic Area Command including five districts and Pacific Area Command encompassing an additional four districts.

The Coast Guard maintains a clear military chain of command from the Commandant (Admiral) through the Area Commanders (Vice Admirals) and District Commanders (Rear Admirals). Prior to 2004, districts were further divided into Groups and Marine Safety Offices. Since 2004, specific geographic areas are governed by sectors overseen by a unified chain of command that integrates all Coast Guard activities in a designated area of responsibility. A Coast Guard captain serving in dual roles as Captain of the Port and Federal Maritime Safety Coordinator commands each sector. Captains of the Port are Coast Guard captains in charge of enforcing Coast Guard regulations in a designated coastal region. Federal Maritime Safety Coordinators oversee the collaborative development and joint execution of local maritime security plans.

Figure 16: Coast Guard Areas and Districts[581]

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[581] "Units," http://www.uscg.mil/top/units/. Accessed June 29 2012.

Surge capacity

The Coast Guard organizational structure and three specific policies have endowed the agency with a robust surge capacity. First, the Coast Guard bases key personnel and assets in strategic locations around the United States and maintains the processes and systems necessary to rapidly shift personnel and assets in times of need.[582]

Second, the Coast Guard employs standardized training, assets, exercises, and unit structures to enable it to deploy resources from anywhere in the organization and achieve instantaneous interoperability in the field.[583] In fact, the Coast Guard conducts regular standardization reviews to ensure that this capability remains intact.[584]

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[582] "Coast Guard: Observations on the Preparation, Response, and Recovery Missions Related to Hurricane Katrina," 15.
[583] Ibid. 9.
[584] Ibid. 15.

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Third, Coast Guard units are designed to be self-sufficient. In fact, "near total self-sufficiency of units plus a unifying command structure offers the flexibility for Coast Guard units—land-based, afloat, and airborne—to operate jointly or independently in any combination for effective execution."[585] Coast Guard deployment and standardization policies enabled the Coast Guard to employ mixed crews and assets during Hurricane Katrina response operations. In one representative case, a helicopter pilot from Florida, a copilot from Alabama, and a rescue swimmer from Alaska formed a crew and successfully executed multiple search and rescue missions.[586]

The Coast Guard has developed a variety of institutions and structures to manage and deploy field units in recent decades. With the escalation of the "war on drugs" in the 1980s, the Coast Guard became involved in novel interagency arrangements to improve coordination and collaboration among military and law enforcement agencies engaged in counter-narcotics operations. In 1982, the Coast Guard established Law Enforcement Detachments to perform law enforcement missions aboard U.S. Navy vessels during peacetime.[587] In 1983, the Coast Guard participated in the National Narcotics Border Interdiction System, which created an innovative strategic policy coordination forum for law enforcement and military services to prioritize interdiction targets, coordinating activities, and executing collaborative operations.[588] In 1989, at the direction of President George H.W. Bush, the Department of Defense established Joint Interagency Task Force South to patrol the Caribbean and Joint Interagency Task Force West to police the Pacific

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[585] Beard, Hanson, and Scotti, eds., *The Coast Guard*, 346.
[586] "Coast Guard: Observations on the Preparation, Response, and Recovery Missions Related to Hurricane Katrina," 15.
[587] "Policy Changes / Major Events and Their Influence on the Missions and Capabilities of the U.S. Coast Guard and Its Predecessor Services," http://www.uscg.mil/history/uscghist/Policy_Changes.asp. Accessed March 28, 2011.
[588] Ibid.

approaches to the southern border.[589] These pioneering task forces have developed

doctrine, technical infrastructure, and systems to achieve unprecedented levels of

collaboration. This experience has directly contributed to the evolution of Coast Guard

institutions, organizational structures, culture, and learning systems.

Other sentinel events, including the Exxon Valdez oil spill and the terrorist

attacks of September 11, 2001, led to similar organizational innovations. For example,

the Exxon Valdez oil spill instigated the passage of the Oil Pollution Act of 1990, which

created national Strike Teams to respond to oil spills and other disasters. The terrorist

attacks of 2001 caused the Coast Guard to replicate organizational innovations that

contributed to the successful evacuation of Manhattan on September 11, 2001, in the

form of sector commands and to overhaul its approach to maritime security, leading to

the creation of twelve Maritime Safety and Security Teams to perform a broad spectrum

of port safety and security operations.[590] In summary, although Hurricane Katrina

presented the Coast Guard with unique challenges, the experience of the preceding

decades had already compelled the Coast Guard to develop inter-organizational structures

and processes to facilitate large-scale domestic incident management.

Collaborative culture

The Coast Guard culture enshrines many of the elements associated with high

collaborative performance. Personnel are indoctrinated to value collaboration, are adept

at developing trusting and reciprocal inter-organizational relationships, and maintain

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[589] Joint Task Force North (originally Joint Task Force-6) was established concurrently for a similar purpose on the southwestern land border. Although this task force also includes the Coast Guard, the Coast Guard is more active in JTF-South and JTF-West. "Joint Task Force North: History," Department of Defense, http://www.jtfn.northcom.mil/subpages/history.html. Accessed June 7, 2012.
[590] "USCG Missions."; Flynn, *The Edge of Disaster: Rebuilding a Resilient Nation*, 124.

strong leadership support for collaborative endeavors. Moreover, the Coast Guard has institutionalized shared decision-making and conflict resolution processes, such as area committees for oil spill planning, to facilitate collaboration before and after disasters.

The cultural roots of the Coast Guard can be traced to its organizational predecessors. However, to suggest that one legacy agency or mission area predominates the others would be inaccurate. In fact, the core traits that distinguish the Coast Guard culture are its commitment to the execution of its *multi-mission* authorities, balance competing imperatives, and collaborate with partner agencies. Stephen Flynn observes that, "the most valuable skill the Coast Guard possesses is not its ability to work in the maritime environment, but its ability to manage complex, life-threatening, and time-sensitive events that often require close coordination with many other entities."[591]

Table 6: Coast Guard Publication One describes Coast Guard doctrine[592]

Principles of Coast Guard Operations
Clear objective
Effective presence
Unity of effort
On-scene initiative
Flexibility
Managed risk
Restraint

Coast Guard Publication One elicits the agency's core principles (see above). These principles reflect the Coast Guard's leadership model: senior-level strategic guidance is interpreted and acted upon by field-level personnel empowered to make

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[591] Flynn, *The Edge of Disaster: Rebuilding a Resilient Nation*, 129.
[592] "U.S. Coast Guard: America's Maritime Guardian."

difficult decisions in a complex operating environment.[593] The Coast Guard does not

value adherence to rules and standard operating procedures over initiative. As a result,

some observers argue that "not a single life was lost due to Coast Guard red tape" during

Hurricane Katrina search and rescue operations.[594] Much like FEMA, the Coast Guard's

culture is firmly rooted in its authorities. Yet, unlike most other federal departments and

agencies, Coast Guard personnel see themselves as first-responders.[595] Review of Coast

Guard operations during Hurricane Katrina suggests that Coast Guard principles and

culture directly affected decision-making and operational outcomes.[596]

The Coast Guard culture is built around a guardian ethos that unites its safety,

security, and stewardship missions through a common concept of preservation. Rather

than favoring one mission over another, the agency's culture emphasizes its multi-

mission responsibilities. Fears that the Coast Guard would not be able to balance its

martial national security responsibilities with its other mission areas have largely proven

unfounded.[597] The agency's commitment to its multi-mission mandate is supported by

analysis of the diverse career backgrounds of its recent senior leadership and its balanced

acquisition of assets capable of contributing to the broad spectrum of its missions.[598]

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[593] "Coast Guard: Observations on the Preparation, Response, and Recovery Missions Related to Hurricane Katrina"; "U.S. Coast Guard: America's Maritime Guardian."

[594] Flynn, *The Edge of Disaster: Rebuilding a Resilient Nation*, 125.

[595] "Hurricane Katrina: A Nation Still Unprepared," 333.

[596] Ibid. 184.

[597] For example, Kelly articulated concern about the ability of the Coast Guard to adapt to its post-9/11 responsibilities. Michal R. Kelley, "When Culture and Doctrine Collide: Military, Multi-Mission, Maritime Service" (Naval War College, 2002).

[598] Review of the biographies of recent commandants and vice commandants reveals that the Coast Guard's most senior officials have multi-mission backgrounds and have served on a diversity of platforms including surface vessels and aircraft. Unlike other branches of the armed services in earlier eras, there is no indication of a dominant career path or culture in the Coast Guard today.

Third, the Coast Guard culture prizes partnerships and collaboration. As a result of a variety of factors including its multi-mission mandate, recurrent resource constraints, its portfolio of regulatory responsibilities, and its extensive history of interaction with the private sector, the Coast Guard has developed a culture of collaboration. From Alexander Hamilton's legacy of restrained enforcement of customs laws to its more recent joint interdiction efforts with the U.S. Navy to its modern-day administration of collaborative port security networks led by Coast Guard Captain of the Ports, collaboration is a core element of Coast Guard culture and activities.

Organizational learning and adaptation

Organizational learning is described as, "an experience-based process through which knowledge about action-outcome relationships develops, is encoded in routines, is embedded in organizational memory, and changes collective behavior."[599] This process usually takes place over extended time periods. Organizational adaptation generally refers to an organization's ability to manage a rapid learning cycle when dealing with novel problems.

The Coast Guard's ideological and institutional commitment to organizational learning is clear. The agency routinely conducts after action reviews and sustains a number of lessons learned and corrective action programs. In the wake of Hurricane Katrina, the Coast Guard demonstrated an ongoing commitment to systematic organizational learning. The Coast Guard generated a variety of after-action reports and made them available to Coast Guard personnel through an internal database, "CG

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[599] Lipshitz, Popper, and Friedman, "A Multifacet Model of Organizational Learning." Note: Lipshitz cites an unpublished paper by Barnett in his bibliography.

SAILS," the official Coast Guard database for lessons learned.[600] Similarly, the Coast Guard has repeatedly experimented with novel collaborations and organizational arrangements, including the creation of interagency joint task forces on the southern maritime borders and the creation of Coast Guard Sectors. Institutionally, the Coast Guard has proven adept at identifying and replicating the most successful experiments to achieve lasting organizational change.

The Coast Guard's ability to adapt to novel situations in real-time constitutes a slightly different capacity. Adaptive organizations must be able to rapidly collect and analyze information, recognize aberrations that require atypical response, and develop and test innovative solutions. The Coast Guard's focus on planning, training, and exercises prepared Coast Guard personnel to engage in "double-loop learning" cycles.[601] Coast Guard personnel were equipped with the knowledge, skills, abilities, and autonomy to adjust operational goals and methods in the field. This flexibility enabled the Coast Guard to engage in rapid learning cycles that contributed to the adaptiveness of the search and rescue response.

Unified command

Operational Coordination

In the context of Hurricane Katrina search and rescue operations, a meaningful unified command would have had at least three key attributes. First, it would include the main organizational actors in search and rescue operations: the New Orleans Fire

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[600] "Coast Guard: Observations on the Preparation, Response, and Recovery Missions Related to Hurricane Katrina," (Washington, DC: General Accountability Office, 2006); "Coast Guard: Observations on the Preparation, Response, and Recovery Missions Related to Hurricane Katrina," 38.
[601] "Coast Guard: Observations on the Preparation, Response, and Recovery Missions Related to Hurricane Katrina," 9.

Department, New Orleans Police Department, Wildlife and Fisheries, Louisiana National Guard, FEMA, and the Coast Guard. Second, it would co-locate senior officials from each organization with the authority to make major operational decisions and implement them. Third, it would integrate air and surface operations. Associated outcomes would include evidence of search coordination and the organized transfer of survivors among rescue organizations.

By this standard, the Coast Guard did not establish a unified command for search and rescue operations until approximately September 5th. Admiral Timothy Keating of the military's Northern Command observed that, "During the first four days [of response operations], no single organization or agency was in charge of providing a coordinated effort for rescue operations."[602] Similarly, according to the House Report, "There was little coordination of where the victims should be or actually were taken."[603]

According to the National Response Plan, FEMA was the lead agency responsible for establishing a unified command. However, FEMA did not establish a unified command for search and rescue before or immediately after landfall. As a result, the Coast Guard, Wildlife and Fisheries, and the National Guard set up independent command posts in the vicinity of New Orleans.[604] When FEMA first attempted to establish a unified command at a parking lot in Jefferson Parish, they were "the only ones who showed up."[605] Forty-eight hours after landfall, FEMA would finally establish a unified command for search and rescue with Wildlife and Fisheries at Zephyr Field.[606]

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[602] Ibid. 230.
[603] Ibid. 194.
[604] "Hurricane Katrina: A Nation Still Unprepared."
[605] Ibid.
[606] Ibid. 337.

However, key actors, including the Louisiana National Guard and the Coast Guard were not fully integrated.

FEMA's Deputy Federal Coordinating Officer in Louisiana, Scott Wells, recalls that the Coast Guard established junior officer liaisons at key locations, including the Baton Rouge State Emergency Operations Center. However, these officers lacked the authority to direct search and rescue operations and instead, "all operations were directed by senior Coast Guard officers from another location. These officers refused to meet and conduct joint search and rescue operations with FEMA and state agencies."[607]

Furthermore, air operations were, at best, loosely coordinated with surface operations. For example, in New Orleans, Louisiana National Guard and the Coast Guard maintained separate tactical centers for airborne search and rescue missions (Taskforce-Eagle and Belle Chasse Naval Air Station, respectively). However, the agencies did divide the city into sectors to achieve tacit coordination.[608]

Situational Awareness

Situational awareness can be assessed along a continuum. At its most basic, situational awareness requires a broad understanding of the scope and general nature of a crisis at a given point in time. At its most advanced, situational awareness includes a comprehensive understanding of a situation in real-time, in both strategic and tactical terms.

By this standard, the situational awareness of the Coast Guard and its search and rescue partners was limited. As detailed in the preceding chapter, search and rescue organizations lacked an accurate assessment of the scope of the flooding in New Orleans

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[607] "A Failure of Initiative," 190.
[608] Ibid. 231.

for at least the first 12 hours of the search and rescue operation. In the initial days of the crisis, search and rescue organizations lacked a common understanding of the number of survivors in need of rescue, priorities, facilities available to process survivors, and any means to track survivors who needed rescue or had already been rescued. Key data points, including the Coast Guard's failure to convey credible reports to the Homeland Security Operations Center regarding the status of the levees to ongoing confusion regarding the provision of goods and services to rescued survivors, reflect serious shortcomings in situational awareness.

Finding: The situational awareness of the Coast Guard and its search and rescue partners was limited.

Technical interoperability

Yet, despite its history of interagency operations with many of the partners involved in Hurricane Katrina search and rescue operations, the Coast Guard experienced significant technical interoperability challenges in the wake of Hurricane Katrina. Specifically, the Coast Guard confronted two distinct problems.

First, Hurricane Katrina disabled or degraded many communications systems across the Gulf Coast. Both internally and externally, communications networks were rendered highly unreliable.[609] However, the Coast Guard did an exemplary job of overcoming communications failures by developing plans and procedures that were not entirely reliant on communications, pushing the initiative for decision-making to field operators, and pre-staging back-up communications equipment including satellite phones

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[609] "Hurricane Katrina: A Nation Still Unprepared," 336.

and a mobile communications unit.[610] In the hours and days after the storm, the Coast Guard gradually restored internal and external communications systems.

The second problem confronting the Coast Guard was a lack of technical interoperability between Coast Guard communications systems and the systems of partner agencies. The Coast Guard communications systems were not interoperable at any meaningful "bandwidth" with organizations including FEMA, the National Guard, Wildlife and Fisheries, New Orleans Police Department, and New Orleans Fire Department.[611] Although the Coast Guard regularly worked with the U.S. Navy to equip Coast Guard vessels with interoperable equipment prior to joint patrols, similar initiatives were notably absent in the lead-up to Hurricane Katrina.[612] The Coast Guard failed to take systemic measures to overcome these shortcomings prior to the storm or in the immediate aftermath. The inability to reliably communicate with interagency partners operating in the same space had a debilitating effect on the Coast Guard's ability to collaborate with partner organizations.

Collectively, the Coast Guard possessed key elements of the collaborative infrastructure that prevailing theory suggests is necessary for high collaborative performance. The Coast Guard maintains suitable authorities, a relatively modest but stable and sufficient resource base, a decentralized and agile organizational structure, and limited technical interoperability capabilities.

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[610] "Coast Guard: Observations on the Preparation, Response, and Recovery Missions Related to Hurricane Katrina," 30.
[611] VHF frequencies typically used by the Coast Guard to communicate with other emergency responders were overloaded and plainly insufficient for the requirements of a catastrophe. As many as 4,000 users attempted to use five or fewer mutual aid channels in the storm's aftermath. "Hurricane Katrina: A Nation Still Unprepared," 290, 336.
[612] Ostrom, *The United States Coast Guard: 1790 to the Present*, 164.

Preparedness

For the purposes of this research, preparedness is operationalized as a function of joint planning, training, and exercises. Collectively, these activities contribute to social capital or trusting relations among key decision-makers and responders.

The preparedness of responding search and rescue organizations for the Hurricane Katrina response was robust but flawed. All of the participating search and rescue organizations were, with the exception of the lack of swift water training for some units, well-trained to execute search and rescue operations. Second, at the senior levels, there is evidence of pre-existing social relationships among the leadership teams, especially among the Coast Guard, the National Guard, and Wildlife and Fisheries.[613] These relationships were likely a consequence of the routine operational responsibilities and day-to-day activities of these organizations within the region. It is likely that social capital among front-line officers was present to at least a limited degree for the same reason.[614] Third, the Coast Guard did exercise regularly with state and local agencies. In particular, the Coast Guard had established an excellent working relationship with the boat units of Wildlife and Fisheries.[615] In fact, the Coast Guard held hurricane exercises every spring in localities across the Gulf Coast.[616]

However, these preparedness measures were seriously undermined by the absence of a joint plan for mass search and rescue operations.[617] Although there was a National Search and Rescue Plan (1999), it was designed for small-scale events. As a result of the

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[613] Ibid. 333.
[614] Coast Guard personnel turn over every three years in District Eight, thus, it is reasonable to expect that operational level relationships did exist on a meaningful scale. Ibid. 183.
[615] Ibid. 333.
[616] Ibid. 183.
[617] Ibid.

Hurricane Pam Exercise in 2004, a FEMA contractor drafted the "Southeast Louisiana Catastrophic Hurricane Functional Plan," but this document was more a concept of operations and was not complete before Hurricane Katrina struck.[618] However, the Hurricane Pam documentation was used extensively by FEMA to identify and guide response taskings.[619] Unfortunately, urban search and rescue planning in the National Response Plan and other documents was of little relevance as well.

FEMA

Inter-organizational power dynamics

FEMA's response to Hurricane Katrina was seriously undermined by inter-organizational power dynamics. In the years preceding Hurricane Katrina, the agency's mandate was undermined by ideological disagreement among political and organizational leaders regarding FEMA's proper role in disaster management. FEMA lacked political support and suffered significant degradation in its access to senior decision-makers within the U.S. Government after it was incorporated into the DHS. This ideological turn and political weakness adversely affected the agency's funding and asset base, the availability of suitably trained staff, and FEMA's capacity to surge and meet the requirements of catastrophic scenarios. In short, FEMA lacked the organizational power base to support collaboration and, as a result of its vulnerability, was predisposed to become consumed in blame-shifting behaviors.

Presence of Shared Goals

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[618] "Southeast Louisiana Catastrophic Hurricane Functional Plan," (2004); "Hurricane Katrina: A Nation Still Unprepared," Chapter 8.
[619] "A Failure of Initiative," 83.

Prior to Hurricane Katrina, FEMA conceived of its mission as leading America's efforts "to prepare for, prevent, respond to, and recover from disasters."[620] Its goals were to reduce loss of life and property, minimize suffering and disruption, prepare the nation for the consequences of terrorism, serve as the nation's portal for emergency management information, develop its employees, and make FEMA a world-class enterprise. By this standard, FEMA shares a common mission with many other departments, agencies, and organizations. Nearly every agency in the U.S. Government has emergency management and continuity of government responsibilities and it is FEMA's mission to coordinate and complement those efforts.[621] Fran Townsend, President Bush's Homeland Security and Counterterrorism Advisor, explained that FEMA,

> exists primarily to coordinate other federal agencies and departments during emergency response and recovery—acting as an honest broker between departments and agencies, providing a command structure, and serving as the single point of entry for state and local officials into the federal government.[622]

Indeed, FEMA's senior leadership viewed their organization as a "coordinating agency" before all else.[623]

However, common goals were not enough to facilitate collaboration in the years leading up to or in the days following Hurricane Katrina. To understand why, it is helpful to review what the National Association of Public Administration labeled the three

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[620] "A Nation Prepared: Federal Emergency Management Agency Strategic Plan Fiscal Years 2003-2008," (Washington, DC, 2003).

[621] Bea, "Organization and Mission of the Emergency Preparedness and Response Directorate: Issues and Options for the 109th Congress," 18-21.

[622] "The Federal Response to Hurricane Katrina: Lessons Learned," 17.

[623] "A Nation Prepared: Federal Emergency Management Agency Strategic Plan Fiscal Years 2003-2008," 2.

"impossible aspects" of FEMA's mission.[624] First, there is a stark disconnect between the three-tiered federal structure of the government and expectations that FEMA will serve as a national "911" emergency response service. Second, FEMA is obliged to coordinate the activities of federal, intergovernmental, and non-government organizations, many of which do not wish to be "coordinated" in the first place. Lastly, FEMA operates in an environment where a "not on my watch" mentality prevails among politicians and partners who are prone to underestimate the likelihood that disaster will strike in the near term. As a result, FEMA often lacks the necessary support for preparedness and mitigation activities and is micro-managed or even pushed aside entirely during the acute phases of disaster response and recovery. Prior to Hurricane Katrina, FEMA's efforts in the Gulf Coast emphasized preparedness for hurricanes and other likely natural hazards.[625] However, these factors, exacerbated by the removal of preparedness programs from FEMA's portfolio of responsibilities, reduced the agency's ability to build and sustain partnerships in the region.

Authorities

Statutory authorities are the bedrock upon which the infrastructure necessary to support collaboration is built. Over the course of its history, FEMA has struggled to overcome the fact that it lacks a single legislative charter. President Carter established FEMA by Executive Order in 1979 and based the new agency's authorities on a collection of pre-existing legislation. As a result, FEMA was more a collection of disparate programs than a unified agency. FEMA was sometimes derided as "The

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[624] "National Academy of Public Administration Report on FEMA: Coping with Catastrophe."
[625] For example, FEMA hosted the Hurricane Pam exercise in the summer of 2004 in a focused effort to prepare the region for precisely the type of destruction wrought by Hurricane Katrina.

Rodney Dangerfield of Washington" for the lack of respect it was paid.[626] Uniquely, FEMA is dependent on networks of other organizations to successfully execute its statutory responsibilities. FEMA is not authorized or sufficiently resourced to execute any of its core functions independently. As a result, FEMA must often resort to blame-shifting to protect its meager power base and vulnerable reputation.

Many programs reported to different congressional committees and political appointees through the mid-1990s. Although this problem was ameliorated by James Lee Witt's unifying leadership, the Stafford Act of 1988 (which amended the Disaster Relief Act of 1974), and the repeal of the Federal Civil Defense Act in 1994, FEMA's authority remained sufficiently unclear that it was subject to competing interpretations. For example, prior to James Lee Witt's reinterpretation of the Stafford Act, the agency's own lawyers did not believe that FEMA had the authority to pre-deploy assets in advance of likely disasters.[627]

In 1996, President Clinton provided FEMA and its Director with unprecedented political prestige by extending James Lee Witt Cabinet membership. The political credibility this arrangement provided expired when President Bush revoked Cabinet membership from the Director of FEMA in 2001. Passage of the Homeland Security Act of 2002 transferred FEMA into DHS and re-christened the agency as the Directorate of Emergency Preparedness and Response, consolidated other minor emergency

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[626] "National Academy of Public Administration Report on FEMA: Coping with Catastrophe," 41-68.
[627] Ibid.

management authorities into Emergency Preparedness and Response, and delegated terrorism preparedness to another directorate.[628]

FEMA's statutory authorities were clearly not sufficient to prepare FEMA to coordinate a catastrophic incident response. FEMA's authorities were insufficient to facilitate efficient collaboration for a number of reasons. First, significant emergency management authorities and resources remained distributed among a large number of departments and agencies at all levels of government. This is a function of the federal structure of government, the distribution of power within the executive branch, and bureaucratic politics.

Second, FEMA's statutory charters did not provide the agency with the political power necessary to drive collaboration in crises. Michael Brown, the Director of FEMA, had limited authority and negligible political capital as Hurricane Katrina crashed ashore.[629]

Third, FEMA's history of competing all-hazards and civil defense authorities and political imperatives often led to a confused sense of mission, a compartmentalized organization, and weak management.[630] Although this mission confusion was abated during the years between the end of the Cold War and September 11, 2001, concerns with weapons of mass destruction rose to replace the fear of mutually assured destruction. Although it remains unclear if any specific statutory mandate could have equipped FEMA with the authority and political power necessary to drive collaboration, it is

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[628] In fact, Section 507 directs FEMA to meet its existing Stafford Act responsibilities, conduct all-hazards comprehensive emergency management, and revise the Federal Response Plan. Source: *Homeland Security Act of 2002*, Public Law 107-296.

[629] FEMA's incorporation into DHS, the agency's persistent under-resourcing, and Brown's lack of a personal relationship with President Bush support this conclusion.

[630] See, for example: "National Academy of Public Administration Report on FEMA: Coping with Catastrophe."

apparent that the distribution of authorities—at both the interagency and intergovernmental levels—in the domain of national emergency management prior to Hurricane Katrina was not conducive to crisis collaboration.

Funding and assets

Unlike many other agencies and departments, FEMA is not resourced to carry out extensive operations but rather to assist the efforts of other organizations to do so in a coordinated fashion. Historically, there has often arisen a significant disconnect between the public perception of FEMA's role in emergency management and its true function. FEMA is, in fact, a small agency of approximately 2,500 full-time employees with a limited mandate. However, close examination of FEMA's history reveals that FEMA has never been properly resourced to execute more limited coordination functions in a truly catastrophic environment. Although FEMA often managed small and moderate scale disasters successfully in recent years, the agency has also consistently become overwhelmed in the face of catastrophe. FEMA's caustic experience during Hurricane Andrew in 1992, the most damaging hurricane in history prior to Katrina, was perhaps the closest parallel to the agency's flawed response to Hurricane Katrina 13 years later.

The House Report on Hurricane Katrina would later conclude that FEMA was not prepared to handle a catastrophe. According to the report, FEMA's problems included "unqualified political leadership, budget shortages, inadequate workforce, FEMA's inclusion within DHS, and underdeveloped and inadequate response capabilities."[631] Deputy Federal Coordinating Officer for Louisiana, Scott Wells, underscored these conclusions observing,

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[631] "Hurricane Katrina: A Nation Still Unprepared," 213.

> FEMA is not trained, FEMA is not equipped, FEMA is not organized to do very large response operations… If you want big capability, you [have] got to make a big investment. And there is no investment in response operations for a catastrophic disaster.[632]

FEMA's baseline budget (excluding non-Stafford Act disaster funding) was permanently reduced by 14.8% when FEMA joined DHS in 2003.[633] Although at least part of this reduction and other charges against FEMA's budget can be attributed to the transfer of overhead and specific programmatic functions out of the agency, it is abundantly clear that funding shortages diminished FEMA's capacity and readiness for catastrophic disaster response operations. An independent analysis from the DHS Office of Inspector General demonstrates that funds appropriated to FEMA were increasingly diverted to the Disaster Relief Fund, which FEMA could not tap to build and sustain critical capabilities.[634] As a result, FEMA's capacity atrophied far more than top-line budget figures would suggest.
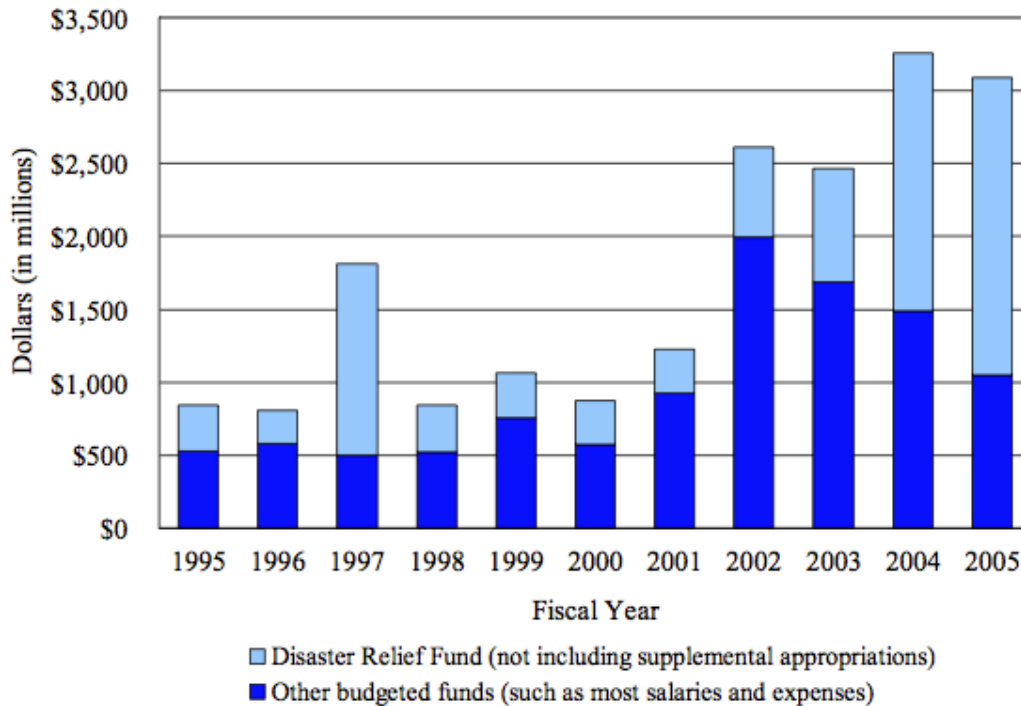
Figure 17: FEMA's budgetary crisis[635]

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[632] Ibid.
[633] "A Failure of Initiative," 156.
[634] "A Performance Review of FEMA's Disaster Management Activities in Response to Hurricane Katrina," 112.
[635] Ibid. 122.

FEMA Enacted Budget Appropriations, FY 1995 – FY 2005

Legend:
- ☐ Disaster Relief Fund (not including supplemental appropriations)
- ■ Other budgeted funds (such as most salaries and expenses)

In 2001, the Administration of George W. Bush implemented a "leaner" and more restrictive interpretation of the proper role of federal emergency management at FEMA. Joe Allbaugh, Bush's campaign manager, was appointed Director of FEMA despite his lack of experience in emergency management. He was, however, a confidante of the president and was determined to re-align FEMA to suit the president's fiscal and ideological goals. He immediately set about reducing FEMA's mitigation activities and eliminating programs the Bush Administration deemed inefficient.[636] Allbaugh explained his plans for FEMA during congressional testimony:

> Many are concerned that federal disaster assistance may have evolved into an oversized entitlement program. ... Expectations of when the federal government should be involved and the degree of involvement may have ballooned beyond what is an appropriate level. We must restore the

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[636] Roberts, "Reputation and Federal Emergency Preparedness Agencies: 1942-2003," 25.

predominant role of state and local response to most disasters. Federal assistance needs to supplement, not supplant, state and local efforts.[637]

After 9/11, Allbaugh sought to reorient FEMA to address the threat of terrorism through civil defense. By March of 2003, Allbaugh's efforts to remake FEMA as an independent agency were overtaken by events. On March 1, 2003, FEMA was merged with the newly created DHS. FEMA became the Emergency Preparedness and Response Directorate within DHS. In the process, Allbaugh turned over leadership of FEMA to his deputy, Michael Brown, and FEMA lost its entire portfolio of preparedness responsibilities.[638]

These shortfalls directly affected FEMA's collaborative capacity. For example, critical funding requests, including requests in 2004 and 2005 for $100 million for catastrophic planning, were denied.[639] Moreover, funding designated for disaster preparedness decreased dramatically. Mitigation funding was halved and mitigation programs directed to Louisiana were eliminated.[640] The authority to award preparedness grants was transferred to the DHS Office for Domestic Preparedness, formerly of the Justice Department, which re-oriented three out of every four grants to address counter-terrorism preparedness and, in the process, short-circuited FEMA's principal mechanism for establishing and sustaining pre-disaster partnerships.[641]

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[637] Committee on Appropraitions, Subcommittee on Veterans Affairs, Housing and Urban Develooopment and Independent Agencies hearing on VA and HUD Appropriations, *Written Statement of Allbaugh*, May 17, 2001.
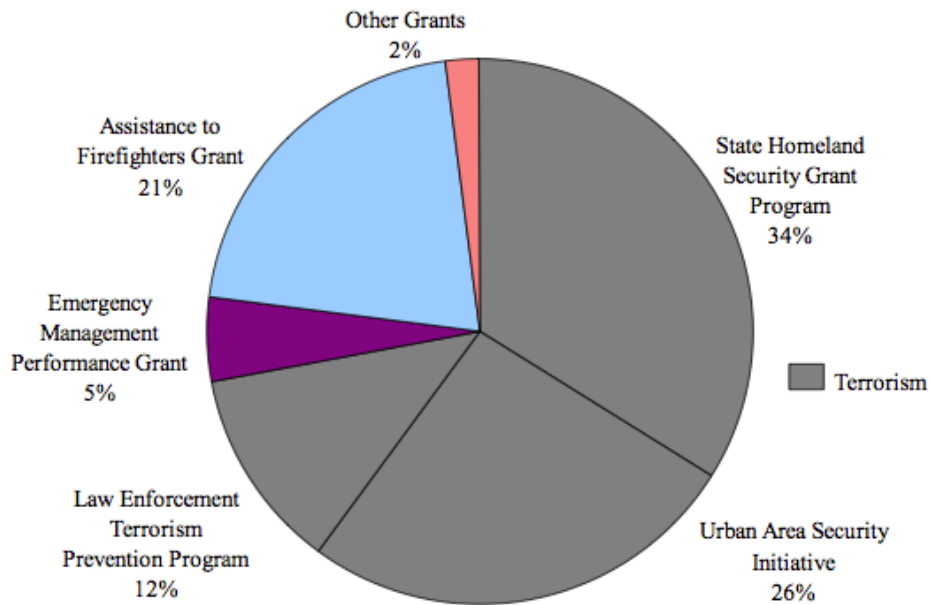[638] "Hurricane Katrina: A Nation Still Unprepared.", 213
[639] Ibid. 216.
[640] Charles Perrow, "Using Organizations: The Case of FEMA," The Social Science Research Council, http://understandingkatrina.ssrc.org/Perrow/. Accessed March 2, 2012.
[641] Ibid.

Figure 18: Grants re-purposed for counter-terrorism[642]

Most FY 2005 DHS Grant Funding for First Responders Focuses on Terrorism

- Other Grants 2%
- Assistance to Firefighters Grant 21%
- Emergency Management Performance Grant 5%
- Law Enforcement Terrorism Prevention Program 12%
- State Homeland Security Grant Program 34%
- Urban Area Security Initiative 26%
- Terrorism

Staffing

Prior to Hurricane Katrina, FEMA was staffed with only 2,250 full-time employees.[643] Moreover, in the analysis of the DHS Office of Inspector General, "frequent reorganizations, chronic vacancies, the use of temporary staff in permanent positions, and fragmented human resources management" severely constrained the size and effectiveness of FEMA's workforce.[644] These factors and the imposition of a deliberate strategy to preserve financial resources by leaving some vacancies unfilled resulted in a significant discrepancy between FEMA's strength "on paper" and the reality in the field.[645]

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[642] "DHS' Efforts to Enhance First Responders' All-Hazard Capabilities Continue to Evolve," (Washington, DC: General Accountability Office, 2005).
[643] "Hurricane Katrina: A Nation Still Unprepared," 175.
[644] "A Performance Review of FEMA's Disaster Management Activities in Response to Hurricane Katrina," 118.
[645] Ibid. 119, 184-185.

Significantly, a severe "brain drain" had thinned the agency's senior ranks in the years preceding Katrina, an agency-wide vacancy rate of 15-20%, and a meager training budget seriously affected the agency's capacity to operate.[646] In August 2005, the directors of FEMA's preparedness, response, and recovery divisions had recently left the agency, eight out of ten of FEMA's regional directors were working in an acting capacity, and FEMA had over 500 vacancies.[647] Further, FEMA lacked a formal system of employee development to train and educate qualified staff for key positions. Internal enrollment in professional development programs decreased in the ten years preceding Hurricane Katrina.[648] As a direct result, FEMA was unable to fill critical staffing positions at coordination centers, including the National Response Coordination Center, during the response to Hurricane Katrina.[649]

FEMA also maintained a roster of over 4,000 Disaster Assistance Employees, Temporary Disaster Employees, and Cadre On-Call Response Employees serving in a reserve capacity.[650] However, only 40-50% of these employees were available for

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[646]"Hurricane Katrina: A Nation Still Unprepared."; "A Failure of Initiative."

[647] "A Failure of Initiative," 157.

[648] "A Performance Review of FEMA's Disaster Management Activities in Response to Hurricane Katrina," 122.

[649] Ibid. 121.

[650] "Hurricane Katrina: A Nation Still Unprepared, "217-218; FEMA retains four categories of personnel. Permanent full-time employees are "competitive service" appointments with no specified end date. Temporary full-time employees are typically local staff hired from a disaster-affected area to perform the same functions as disaster reservists. Cadre On-call Response Employees positions are temporary, excepted service appointments with specific "not to exceed" dates. The appointments are for two and four-year terms and are typically renewed if there is ongoing disaster work and funding is available. Disaster Assistance Employees (disaster assistance employees) are Federal employees who work on an intermittent basis forming the major workforce for FEMA in times of emergency. disaster assistance employees help complete FEMA's mission by staffing Joint Field Offices and Disaster Recovery Centers; interviewing disaster victims; conducting and verifying damage assessments; providing administrative, financial and logistical support and performing a wide variety of other tasks. Source: "Terms of Employment," Federal Emergency Management Agency, http://www.fema.gov/about/career/terms.shtm#0. Accessed April 2, 2012.

deployment at any given time and just a fraction of this cadre—about 8%—were capable

of assisting with response operations.[651] To make matters worse, FEMA was slow to

deploy disaster assistance employees. In fact, fewer than 200 were spread across the four

states affected by Hurricane Katrina when the storm struck.[652] Deputy Federal

Coordinating Officer for Louisiana, Scott Wells explained, "We did not have the people.

We did not have the expertise. We did not have the operational training folks that we

needed to do our mission."[653] In short, FEMA's reserves were too few in number and

improperly trained to assist the agency's efforts to collaborate. As a result, FEMA was

unable to establish coherent collaborative relationships with critical partners at all levels

of government.[654]

In 2005, FEMA maintained a variety of field teams including Emergency

Response Team-Advance Element, Emergency Response Team-National, National

Disaster Medical System teams, and urban search and rescue teams. Emergency

Response Team-National units were established after 9/11 to complement Emergency

Response Team-Advance units by providing emergency management services tailored

for high-impact events.[655] National Disaster Medical System teams include a variety of

medical teams including Disaster Medical Assistance Teams. Disaster Medical

Assistance Teams are 35-member self-contained emergency medical teams, including

physicians, physician assistants, nurses, paramedics, and pharmacists.[656] Ideally, these

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[651] "Hurricane Katrina: A Nation Still Unprepared," 217-218.
[652] Ibid. 177.
[653] "A Failure of Initiative," 157.
[654] For example, the Chief of Operations in the FEMA Response Division, explained that staffing shortages precluded development of critical planning documents that would have facilitated collaboration. "Hurricane Katrina: A Nation Still Unprepared," 216.
[655] Ibid. 175.
[656] Ibid. 405.

teams are deployable within six hours and equipped with a complete medical cache

enabling them to treat 250 casualties and sustain themselves for 72 hours unassisted.[657]

Collectively, the National Disaster Medical System teams are staffed by approximately

9,000 volunteers and provide specialized emergency medical response services to

supplement state and local responders.[658] FEMA urban search and rescue teams consist

of elite local first responders specializing in urban collapsed structure search and rescue

and organized into federal task forces for rapid deployment to disaster zones.

FEMA's field teams were in disarray in August 2005.[659] Funding for the teams

diminished significantly beginning in 2002 and their readiness and capability followed

suit.[660] In fact, at the time of the Katrina deployment, the Emergency Response Team-

National units had withered to 25 person units from an original strength of 175

emergency management professionals.[661] Discussing Katrina, William Carwile lamented,

"Of all the shortfalls that I had to manage as a Federal Coordinating Officer this was the

most difficult. This paucity of qualified personnel hurt us in both the response and

recovery phases of the operations."[662] Furthermore, not one of the National Disaster

Medical System teams had a full cache of equipment available for use.[663] The teams lost

their dedicated communications equipment and received fewer training and exercise

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[657] Ibid. 411.
[658] Ibid. 180, 411.
[659]Note: Federal Incident Response Teams (FIRSTs) were not yet staffed at the time of the Katrina disaster. Ibid.
[660] "A Failure of Initiative," 158.
[661] "Hurricane Katrina: A Nation Still Unprepared," 175.
[662] Ibid. 177.
[663] Ibid. 219.

opportunities as a result of budget cuts.[664] FEMA also lacked the logistics systems to

deploy personnel promptly with their critical equipment and supplies, much less sustain

them once they were in a catastrophic disaster zone.[665]

FEMA's broader disaster relief logistics system, designed to deliver mass

quantities of critical goods including water, food, medical supplies, ice, and other

supplies, was completely outstripped by the scale of the disaster.[666] Other problems,

including FEMA's inability to track the location and disposition of deliveries,

incompatible information technology systems, and a general lack of situational awareness

undercut FEMA's ability to collaborate in the wake of Hurricane Katrina.

Organizational Structure

Historically, FEMA has been a Washington-centric organization characterized by

serious internal divisions. During the Reagan Administration, FEMA developed a robust

civil defense organization named the National Preparedness Directorate. By the early

1990s, the National Preparedness Directorate had grown so large and powerful that it was

seriously undermining the capacity of the State and Local Programs and Support

Directorate to manage all-hazards emergencies. In 1993, the National Preparedness

Directorate controlled 38% of FEMA staff and 27% of its budget.[667] Former Director

James Lee Witt reorganized the agency to emphasize state and local programs and broke

down organizational barriers by distributing operational components into the agency's

three directorates—Mitigation, Preparedness, Training and Exercises, and Response and

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[664] "Emergency Preparedness and Response Could Better Integrate Information Technology with Incident Response and Recovery," (Office of Inspector General, Department of Homeland Security, 2005); "A Failure of Initiative.", 152.
[665] "Hurricane Katrina: A Nation Still Unprepared," Chapter 14.
[666] "The Federal Response to Hurricane Katrina: Lessons Learned," 44.
[667] "National Academy of Public Administration Report on FEMA: Coping with Catastrophe," 53-54.

Recovery—and assigning every employee "critical roles" during response and recovery operations.[668]

In 2001, the Bush Administration restructured FEMA to better fit "the evolving mission of the agency and President Bush's streamlining goals."[669] The realignment created several new organizations and re-established an Office of National Preparedness to manage civil defense programs.[670] FEMA assumed its pre-Katrina form in 2003 as it was integrated into the Emergency Preparedness and Response Directorate of DHS ("Emergency Preparedness and Response Directorate" and "FEMA" were used interchangeably to refer to the agency during this period). The most significant organizational change was the removal of preparedness activities from FEMA's portfolio of responsibilities. The logic underlying this reshuffling was that it would allow FEMA to focus more on its response and recovery responsibilities.[671] In practice, it reduced FEMA's ability to collaborate with state and local partners prior to crises and seriously diminished its capacity to prepare for catastrophic response scenarios. As will be discussed later, this artificial administrative break in the emergency management cycle reduced FEMA's ability to learn and adapt from disaster experience.

Surge capacity

The literature on collaboration and emergency management suggests that organizational form should facilitate information sharing, adaptation, scaling and surge activities, and field-based decision-making. Although FEMA's organizational structures

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[668] W.L. Waugh, "Regionalizing Emergency Management," *Public Administration Review* 54, no. May/June (1994), 253-260.
[669] Hogue B and Bea, "Federal Emergency Management and Homeland Security Organization: Historical Development and Legislative Options," 19.
[670] Ibid. 20.
[671] Bea, "Organization and Mission of the Emergency Preparedness and Response Directorate: Issues and Options for the 109th Congress," 9.

were adequately designed for routine crisis management, they fared poorly in the catastrophic test posed by Hurricane Katrina. FEMA's weak regional presence hindered the establishment of partnerships prior to the crisis and failed to provide adequate manpower in the days leading up to the hurricane. More importantly, the agency's inability to surge additional qualified personnel into the region as the crisis escalated represented a clear organizational failing.

Collaborative culture

Although collaboration was an unmistakable part of FEMA's mission and daily operations, the agency did not support the development of a culture that reflected this reality. Although FEMA established a range of joint decision-making bodies such as councils and task forces, the agency undermined the efforts of its personnel to cultivate trusting relationships by hoarding decision-making power in headquarters and failing to maintain the administrative capacity to fulfill commitments.

The most salient and timeless element of FEMA's culture is rooted in the statutory authorities upon which the agency is built. FEMA's initial authorities, and eventually the Stafford Act, all directed FEMA to support states by providing them a mechanism to access the full resources of the Federal Government in the event that state and local capabilities are overwhelmed. In most respects, FEMA was not designed to be a proactive, direct provider of emergency services prior to Hurricane Katrina. In a telling admonition, Federal Coordinating Officer William Lokey explained that FEMA did not deploy more urban search and rescue teams to Louisiana sooner because the state did not ask for them.[672] This orientation stands in stark contrast to the approach of other

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[672] "Hurricane Katrina: A Nation Still Unprepared," 334.

agencies, including, most notably, the Coast Guard, and was a constant in the evolution of FEMA's culture.

> In the years after its establishment, FEMA manifested three cultures including:
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> (1) The Department of Defense civil defense personnel, who tended to have seniority; (2) the disaster relief program, whose employees had considered themselves so close to the president in the 1970s that they answered the phones with the greeting, 'White House;' (3) a firefighting culture from the scientific and grant making programs…[673]

Over the next 15 years, these three cultures transformed into two more rigid camps. The National Preparedness Directorate cultivated a culture of secrecy that prized the tenets of counterintelligence over the precepts of collaboration. This culture thrived into the early 1990s with over 1,900 employees maintaining security clearances, a generous classified budget, and the best equipment and systems.[674] With strong political support, the National Preparedness Directorate successfully hoarded power and resources within the agency. The rest of FEMA was generally focused on all-hazards emergency management and cultivated a set of beliefs that valued collaboration as an integral part of FEMA's mission. However, this collaborative culture was relatively disempowered until James Lee Witt reformed the agency.

Beginning in 1993, Witt transformed the organization by redefining its culture around all-hazards preparedness and customer service. Witt aggressively subjugated the national security culture of the National Preparedness Directorate to the agency's new forward-leaning understanding of its all-hazards mission. By the late 1990s, FEMA's performance in disaster response operations was winning plaudits and its customer

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[673] Roberts, "Reputation and Federal Emergency Preparedness Agencies: 1942-2003," 10.
[674] "National Academy of Public Administration Report on FEMA: Coping with Catastrophe," 16.

service ratings surpassed an unprecedented 85%.[675] Unlike FEMA's previous leaders, who all lacked emergency management experience, Witt understood how to make collaboration work from prior experience at the state and federal levels. He instituted a number of reforms that conveyed his leadership team's commitment to collaboration, including a massive expansion of pre-disaster preparedness and mitigation activities and the institutionalization of the Federal Response Plan, a predecessor to the National Response Plan, which for the first time outlined a collaborative response plan or process for all-hazards response operations.

In the years prior to Hurricane Katrina, the Bush Administration attempted to maintain FEMA's cultural commitment to collaboration but eroded many of the processes and programs on which it was predicated. Most significantly, the Bush Administration removed preparedness functions from FEMA after its integration into DHS, which seriously constrained FEMA's efforts to cultivate collaborative relationships. As a result, FEMA had less to offer state governments and lacked the resources to build relationships through joint planning. This contributed to the rapid decay of trusting relationships between FEMA officials and its regional and local partners.[676]

Morale at FEMA was bottoming out in 2004. A year earlier, FEMA was ranked the worst place to work among federal agencies by the Partnership for Public Service based on survey results provided by the Office for Personnel Management.[677] In 2004, 60% of respondents to a union survey reported that they would leave FEMA for another

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[675] Amanda Hollis Lee, "A Tale of Two Federal Emergency Management Agencies," *The Forum* 3, no. 3 (2005), 9.

[676] Moynihan, "The Network Governance of Crisis Response: Case Studies of Incident Command Systems," 15.

[677] "Best Places to Work," (Partnership for Public Service, 2003).

job if given the chance.[678] Former Director Witt testified to Congress in 2004 regarding

the danger this reform posed to FEMA's collaborative culture observing that,

> the successful partnership that was built and honed over many years between
> local, state, and federal partners and their ability to communicate, coordinate,
> train, prepare, and respond has gone down hill.[679]

FEMA also lacked operational doctrine and standard operating procedures for

responding to disasters.[680] The roles of FEMA headquarters, FEMA Regional Offices,

and field personnel were not clearly defined. In disasters, this often led to confusion and

paralysis.

In summary, although FEMA nominally recognized the necessity of collaboration

and valued its benefits, it did not develop personnel systems to support the cultivation of

collaborative skills, enable FEMA staff to develop trusting relations with officials at

other organizations, or convey credible and consistent leadership support for

collaboration. In the immediate lead-up to Hurricane Katrina, dire projections and

exhortations from senior leaders including Director Brown were not enough to overcome

cultural rigidities. One FEMA employee recalled months after Hurricane Katrina that

prior to the storm's landfall many FEMA employees, "assumed it was going to be just a

regular, normal response to a disaster."[681] As a result of this cultural decay, many—but

not all—FEMA personnel reverted to "rote training, insistence upon following

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[678] Leo Bosner cites a FEMA employee union survey (AFGE Local 4600) from 2004. Leo Bosner, "FEMA and Disaster: A Look at What Worked and What Didn't from a FEMA Insider," ed. Dina Rasor; Also see the Partnership for Public Service 2003 workplace survey, cited previously).

[679] House Subcommittee on National Security, Emerging Threats, and International Relations and the House Subcommittee on Energy Policy, Natural Resources, and Regulatory Affairs, *Oral Testimony of Former FEMA Director James Lee Witt*, March 24, 2004.

[680] "Hurricane Katrina: A Nation Still Unprepared," 220.

[681] Ibid. 183.

inappropriate rules, and an unusual fear of acting without official permission," in their

response to Hurricane Katrina.[682]

Organizational learning and adaptation

FEMA's ideological and institutional commitment to organizational learning is

clear. The agency routinely conducts after action reviews and sustains a number of

lessons learned and corrective action programs. Like the Coast Guard, FEMA maintained

a number of programs and processes to support organizational learning. For example, the

"Lessons Learned Information Sharing" system is the FEMA equivalent of "CG SAILS,"

a system which analyzes and disseminates lessons from real-world events and exercises

across the country.[683] Yet, FEMA's organizational learning capacity was seriously

degraded by the removal of preparedness programs from the agency's portfolio of

activities. This organizational change marked a departure from the comprehensive

emergency management approach and, as a result, FEMA lost much of its capacity to

work with state and local agencies prior to crises.

However, in order to better evaluate FEMA's organizational learning capacity, it

is useful to consider the extent to which it learned from incidents relevant to Hurricane

Katrina. The three most relevant events prior to Hurricane Katrina were Hurricane

Andrew in 1992, the Hurricane Pam Exercise of 2004, and the collective experience

afforded by "the four hurricanes of 2004." After Hurricane Andrew, James Lee Witt

institutionalized a number of reforms that improved FEMA's ability to manage Katrina

response operations including renewal of FEMA's emphasis on all-hazards preparedness,

establishment of field teams, and institutionalization of new norms of pre-crisis

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[682] Perrow, "Using Organizations: The Case of FEMA."
[683] See www.llis.dhs.gov for program description.

deployment and customer service. Although some of these reform initiatives were

neglected between 2001 and 2005, they did improve FEMA's ability to respond to

Hurricane Katrina.

FEMA did not have as much time to learn from the Hurricane Pam exercise and

the four Florida hurricanes of 2004. Hurricane Pam was a five-day tabletop exercise that

engaged 50 parish, state, federal, and volunteer organizations in the Emergency

Operations Center in Baton Rouge.[684] The scenario assumed that 300,000 people would

not evacuate in advance of landfall, 97% of communications would be offline, 1,000

shelters needed, care for 375,000 people required, and that a catastrophic flood would

overwhelm swaths of Southeast Louisiana.[685] The hypothetical storm and ensuing

flooding was projected to cause a staggering 60,000 fatalities.[686] Although the exercise

did increase awareness of the severe risks confronting New Orleans and resulted in the

development of a very general planning document for future use ("The Southeast

Louisiana Catastrophic Hurricane Plan"), the House Report would later rather generously

conclude that "implementation of lessons learned from Hurricane Pam was

incomplete."[687] There is little evidence that knowledge gleaned from Hurricane Pam was

encoded in organizational routines or that it changed collective behavior in Hurricane

Katrina response operations despite the fact that it reportedly weighed heavily on the

minds of many decision-makers.

The four Florida Hurricanes of 2004—Charley, Francis, Ivan, and Jeanne—

offered another opportunity for learning. FEMA's performance responding to the

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[684] "A Failure of Initiative," 81.
[685] Ibid. 81.
[686] Ibid. 81.
[687] Ibid. 83.

hurricanes was criticized as lumbering, inconsistent, and inept.[688] In particular, FEMA

was derided for awarding over $31 million in payments to Florida residents unaffected by

the 2004 hurricanes. Agency personnel and outside observers speculated that FEMA's

haphazard rush to surge personnel and dole out funds had more to do with electoral

politics than competent emergency management.[689] Moreover, Florida's robust

emergency management capabilities may have masked FEMA's other shortcomings in

the lead-up to Hurricane Katrina.[690] Lessons derived from the four Florida hurricanes

prompted FEMA policymakers to institute a major reform initiative based on after action

reviews of the season's events. However, bureaucratic and resource constraints would

ultimately prevent FEMA from effectively compensating for the weaknesses exposed in

the agency's capabilities a full year prior.

  In general, FEMA exhibited a strong organizational learning capacity during the

1990s and a relatively weaker capacity during the years preceding the hurricane. The

evidence suggests that organizational factors including resource availability, personnel

turnover, and adverse bureaucratic politics contributed to this decline.

  FEMA's ability to adapt to novel situations in real-time constitutes a slightly

different capacity. Adaptive organizations must be able to rapidly collect and analyze

information, recognize aberrations that require atypical response, and develop and test

innovative solutions. As previously discussed, FEMA did not have a robust ability to

collect and analyze information. As a result, FEMA did not recognize the Hurricane

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[688] Hollis Lee, "A Tale of Two Federal Emergency Management Agencies;" "Hurricane Katrina: A Nation Still Unprepared," 165.
[689] For example, see: Perrow, "Using Organizations: The Case of FEMA;" Bosner, "FEMA and Disaster: A Look at What Worked and What Didn't from a FEMA Insider."
[690] For example, this is one hypothesis offered by Charles Perrow: Perrow, "Using Organizations: The Case of FEMA."

Katrina disaster and flooding of New Orleans as a novel crisis until the city was already

under up to 20 feet of water and the response was in disarray. On August 30th, a day after

landfall, as FEMA began to recognize the novelty and severity of the situation, the

agency struggled to develop and execute innovative solutions to a range of complex

problems. Often, the agency developed a solution but found itself unable to carry it

through to execution in a reasonable timeframe. FEMA's lagging efforts to achieve

situational awareness in New Orleans and struggles to execute missions, such as the bus

evacuation of the Superdome, are emblematic of these challenges. In summary, FEMA

did not possess the attributes of an adaptive organization in its response to Hurricane

Katrina.

Unified Command

Operational Coordination

In the context of Hurricane Katrina, a unified command for emergency

management would have exhibited the following characteristics. First, in addition to a

host of functional agencies, it would include the main organizational actors responsible

for emergency management: the emergency management offices of the most severely

affected parishes along the coast, the Office of the Mayor of New Orleans, Louisiana

Office of Homeland Security and Emergency Preparedness, and FEMA. Second, it would

co-locate senior officials from each organization with the authority to make major

operational decisions and implement them at a Joint Field Office. Associated outcomes

would include evidence of shared situational awareness; the efficient generation,

processing, fulfillment, and tracking of mission requests; and a common process for joint

decision-making. By this standard, FEMA did not achieve unified command until

September 12[th], nearly two weeks after landfall. Indeed, the House Report concluded that, "during and immediately after Hurricane Katrina, there were lapses in command and control and within each level of government, and between the three levels of government."[691] Key problems include lack of communications, poor situational awareness, and the incapacitation of local government.[692]

A Joint Field Office is a frontline coordination center where federal, state, and local organizations with responsibility for disaster response can coordinate the response.[693] Although FEMA took preliminary steps to establish a Joint Field Office prior to landfall as its plans dictate, the Joint Field Office was not fully operational until 12 days after landfall.[694] This directly impeded FEMA's ability to exercise unified command by reducing opportunities for co-location and contributing to communications shortcomings. In fact, collaboration improved after the Joint Field Office was established, suggesting that this factor at least contributed to the lack of a unified command earlier in the response.[695]

Situational Awareness

Situational awareness can be assessed along a continuum from a broad understanding of the scope and general nature of a crisis at a given point in time to a comprehensive understanding of a situation in real-time, in both strategic and tactical terms, at its most advanced. By this standard, FEMA's situational awareness was decidedly poor.

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[691] Ibid., 183
[692] Ibid., 183
[693] "Hurricane Katrina: A Nation Still Unprepared.", 181
[694] Ibid., 181 Much of the delay was caused by internet connectivity problems related to Louisiana's computer system.
[695] Ibid., 181

FEMA and, for the most part, its state and local counterparts across the Gulf

Coast, lacked strategic and tactical understanding of the situation after landfall in the

hours and days after landfall. Mississippi and Alabama restored some degree of

situational awareness within 24 hours of landfall as a result of the storm's more limited

impact in those states and other organizational factors. In Louisiana, situational

awareness was poor, by nearly any standard, through September 2[nd], when emergency

management officials finally had the manpower to move into the city in droves and

evacuate both the Superdome and Convention Center. At the strategic level, the nearly 24

hour delay in the Homeland Security Operations Center's recognition of the breeching of

the levees and FEMA's protracted confusion about the scope of the situations at, first the

Superdome, and later the Convention Center, are emblematic of poor situational

awareness. Federal agencies, including FEMA and the Coast Guard, did not keep the

Homeland Security Operations Center well-informed of developments on the ground and

the Homeland Security Operations Center failed to seriously consider the few front-line

reports that it did receive.[696] At the tactical level, FEMA's inability to track mission

assignments and manage its logistical responsibilities were indicative of the same.

In a broader sense, FEMA's capacity to develop and sustain situational awareness

in catastrophic disasters has always been weak. The response to Hurricane Andrew was

hobbled by many of the same situational awareness shortcomings that profoundly

degraded the agency's ability to collaborate during the Katrina response.[697] A 1993

National Academy of Public Administration report noted, "federal response to some

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[696] "Hurricane Katrina: A Nation Still Unprepared," 184, 303, 306, 312.
[697] "National Academy of Public Administration Report on FEMA: Coping with Catastrophe," (1993); Patrick Roberts, "Reputation and Federal Emergency Preparedness Agencies: 1942-2003," in *Annual Meeting of the American Political Science Association* (2004), 14-15.

major and catastrophic events has revealed a serious lack of intelligence, command, and control."[698] Between the problematic Hurricane Andrew response in 1992 and the Katrina response in 2005, FEMA did develop a variety of emergency management teams designed to be forward deployed to emergency operations centers in advance of a predicted event to facilitate reporting and collaboration. However, a number of factors reduced FEMA's ability to establish situational awareness during Katrina response operations.

Most importantly, the scale and severity of the Katrina disaster alongside the degradation of most communications networks made situational awareness extremely difficult to achieve. Second, as previously discussed, FEMA's advance teams were under-staffed, under-resourced, and ill-equipped to access devastated locales and maintain communications with regional and national authorities.

Third, FEMA's advance personnel were unable to establish a meaningful presence in key areas of the disaster zone in the immediate aftermath of the storm. For example, FEMA had only a single official in New Orleans in the immediate aftermath of the storm, and he was a public affairs officer there to prepare for Director Michael Brown's visit the next day, not to report on the situation in the city.[699] Other teams were positioned outside the path of the storm but were not properly equipped to promptly move into the disaster zone after the danger passed.[700] Lastly, several critical information processing nodes, including Louisiana Office of Homeland Security and Emergency Preparedness and the Homeland Security Operations Center, provided inaccurate reports

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[698] "National Academy of Public Administration Report on FEMA: Coping with Catastrophe," 28.
[699] Cooper and Block, *Disaster: Hurricane Katrina and the Failure of Homeland Security*.
[700] "Hurricane Katrina: A Nation Still Unprepared."

and poor analysis.[701] However, FEMA is not without blame here either. Had FEMA

provided better reporting to Louisiana Office of Homeland Security and Emergency

Preparedness and/or the Homeland Security Operations Center, all responders' situational

awareness would have been better. FEMA's reporting was limited and largely ignored

due to credibility concerns.[702] To make matters worse, Director Brown often

circumvented the Homeland Security Operations Center and Secretary Chertoff, thus

depriving FEMA's partners of critical information.[703] FEMA's lack of situational

awareness severely affected the agency's capacity to collaborate during the crisis.

Technical Interoperability

Historically, FEMA has struggled with interoperability issues on a number of

levels. First, organizational divides between the civil defense and all-hazards divisions

resulted in and were, in turn, exacerbated by the development of separate and largely

incompatible internal agency IT systems. In the mid-1990s, only a small portion of the

civil defense systems supported civilian operations.[704] In effect, "FEMA developed one

of the most advanced network systems for disaster response in the world, yet none of it

was available for use in dealing with civilian natural disasters or emergency

management."[705] In fact, when Hurricane Andrew struck in 1992, FEMA personnel

resorted to purchasing walkie-talkies from local Radio Shack outlets because FEMA's

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[701] Cooper and Block, *Disaster: Hurricane Katrina and the Failure of Homeland Security*.
[702] Ibid.
[703] "Hurricane Katrina: A Nation Still Unprepared."
[704] Ward Robert et al., "Network Organizational Development in the Public Sector: A Case Study of FEMA," *Journal of the American Society for Information Science* 51, 102; "National Academy of Public Administration Report on FEMA: Coping with Catastrophe," 52.
[705] Robert et al., "Network Organizational Development in the Public Sector: A Case Study of FEMA," 102.

own state-of-the-art communications system remained unavailable to them.[706] Although

the profile of the civil defense mission and its associated organizational schism were

significantly diminished by 2005, the proliferation of incompatible IT systems within the

agency's directorates persisted.[707]

Second, FEMA has developed incompatible systems between its headquarters and

regional offices. Until at least the mid-1990s, the regional offices were "provided with an

array of uncoordinated and non-standard—almost random—systems with no support

infrastructure."[708] Although the situation had almost certainly improved over the past

decade, a 2005 DHS Inspector General report suggests that significant incompatibilities

remained. The report noted,

> Currently, [Emergency Preparedness and Response Directorate] EP&R systems
> are not integrated and do not effectively support information exchange during
> response and recovery operations. Also, EP&R has not fully updated its
> enterprise architecture to govern the IT environment. As a result, during
> significant disaster response and recovery operations, such as the 2004
> hurricanes, IT systems cannot effectively handle increased workloads, are not
> adaptable to change, and lack needed real-time reporting capabilities. Such
> problems usually are due to FEMA's focus on short-term IT fixes rather than
> long-term solutions.[709]

Third, FEMA operated systems that are largely incompatible with the systems

used by its state and local partners. The consequences of this problem were severe. In the

case of Hurricane Katrina, overwhelmed FEMA officials at the Louisiana State EOC had

to manually enter a deluge of state requests into their system because FEMA's system

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[706] Perrow, "Using Organizations: The Case of FEMA."

[707] "Emergency Preparedness and Response Could Better Integrate Information Technology with Incident Response and Recovery."

[708] "National Academy of Public Administration Report on FEMA: Coping with Catastrophe," 57.

[709] Note: "EP&R" and "FEMA" were used interchangeably to refer to the agency during this period. "Emergency Preparedness and Response Could Better Integrate Information Technology with Incident Response and Recovery," 2.

was incompatible with the one used by the state.[710] This incompatibility wasted precious staff time from both FEMA and Louisiana Office of Homeland Security and Emergency Preparedness, made request tracking extremely difficult, and seriously hindered FEMA's ability to collaborate with partners across the state. Moreover, this problem was not unique to Louisiana. The 2005 DHS Inspector General report stated bluntly that FEMA's "response and recovery systems do not share information with those used by major stakeholders in state governments."[711]

Preparedness

For the purposes of this research, preparedness is operationalized as a function of joint planning, training, and exercises. Indicators of advanced levels of preparedness include the existence of joint operational plans, common training standards, joint exercises, and social capital or extensive interpersonal ties among responders.

FEMA and its emergency management partners exhibited moderate levels of preparedness. First, FEMA and the state emergency management agencies did share a common operating plan – the National Response Plan. However, three factors undermined the effectiveness of this plan: the National Response Plan was more a "framework" than a true operational plan, it was new and poorly understood, and key agencies, including Louisiana Office of Homeland Security and Emergency Preparedness and FEMA itself, lacked the resources to implement the National Response Plan on the scale required by a catastrophic emergency. The *Southeast Louisiana Catastrophic Hurricane Functional Plan*, developed by contractors after the Hurricane Pam Exercise

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[710] The State of Louisiana's "E-Team" system was not compatible with FEMA's Action Request Form system. "Hurricane Katrina: A Nation Still Unprepared," 379.
[711] "Emergency Preparedness and Response Could Better Integrate Information Technology with Incident Response and Recovery," 22.

of 2004, provided a concept of operations to encourage planners to think through the resources required for specific missions related to a catastrophic hurricane. However, funding shortages at the federal and state level inhibited further development of this plan or the resolution of known gaps in the capabilities required to overcome the challenges inherent in a catastrophic scenario.

Second, although emergency managers at all levels of government were unevenly qualified for the challenges of catastrophic emergency management, the professionalization of the field of emergency management, led by organizations such as the National Emergency Management Association, did contribute to common training standards, doctrine, and mental models. For example, emergency managers at FEMA, the state, and at the local level had varying levels of experience and formal training, but they did conceptualize emergency management as a cycle of preparedness, response, recovery, and mitigation activities, and often think of response needs and capabilities in terms of the emergency support functions described in the National Response Plan and the Federal Response Plan that preceded it.

Third, FEMA and its state and local counterparts did participate in joint exercises. Most notably, FEMA's Hurricane Pam Exercise provided an opportunity to plan, test, and validate assumptions a full year prior to Hurricane Katrina. Federal grant programs, technical assistance, and training and education programs administered by FEMA and other components of DHS provided opportunities for state and local officials to improve preparedness. However, abundant evidence indicates that most exercise and training programs were resource-constrained in the years leading up to Hurricane Katrina. These

resource shortfalls were exacerbated in Louisiana, where FEMA's state partners were chronically under-funded.

Lastly, social capital among senior emergency managers was strong in a qualified sense. Key officials, including Federal Coordinating Officers, State Coordinating Officers, and emergency managers often knew each other as a result of their daily interactions. The House and Senate Reports on Hurricane Katrina indicate that the senior-most officials were at least familiar with one another prior to the storm's landfall.[712] However, there is less evidence to support the notion that senior officials interacted on a routine basis or that FEMA's social capital was similarly strong in the agency's lower echelons. Unfortunately for the residents of New Orleans, FEMA entered the 2005 hurricane season acutely aware of the risks confronting the Gulf Region, cognizant of its own eroding capacity to manage large-scale natural disasters, and seemingly powerless to do anything about it.

Intergovernmental Collaboration

This section will provide a descriptive analysis of the presence or absence of each variable in this case for the Coast Guard and FEMA, respectively. It will also trace the relationships between and among the variables in order to facilitate the investigation of causal mechanisms and permit the construction of an empirically derived model of crisis collaboration.

Coast Guard

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[712] "Hurricane Katrina: A Nation Still Unprepared;" "A Failure of Initiative."

Goal agreement

In the aftermath of Hurricane Katrina, goal agreement among intergovernmental partners responsible for search and rescue was strong. In general, intergovernmental decision-makers shared a common problem definition, agreed on rescue priorities and asset distribution, and employed commonly accepted methods to administer rescues.

However, in the years and months prior to Hurricane Katrina's landfall, the salience of shared search and rescue goals was significantly less. Although the Coast Guard and its regional partners nominally recognized their shared search and rescue goals and responsibilities, they each failed in one or both of the following preparedness activities. First, search and rescue organizations including FEMA, New Orleans Police Department, and New Orleans Fire Department, did not acquire essential equipment, conduct relevant and realistic exercises, or prepare their personnel for catastrophic incident management operations. Other organizations, including the Coast Guard, National Guard, and Wildlife and Fisheries, viewed the search and rescue mission as central to their organizations' mission and took measures to prepare to execute search and rescue operations.

Second, even among search and rescue organizations that prioritized their search and rescue responsibilities, there was a dearth of joint preparedness planning. The absence of a regional or even national mass search and rescue plan despite widespread recognition of the likelihood of a Hurricane Katrina-like scenario suggests that the simple recognition of a shared goal was not enough to incite serious planning or investment prior to the onset of an acute crisis. This analysis suggests that the presence of shared goals alone is not enough to catalyze collaborative activity. Instead, shared goals must also be

accompanied by urgency. This explains why search and rescue preparedness measures were uneven and joint planning and collaboration prior to onset was so poor despite the fact that post-incident response activities were characterized by high degrees of shared goal recognition and attempts at coordination and collaboration.

Common understanding of roles and responsibilities

Roles and responsibilities were not commonly understood among intergovernmental search and rescue partners. Although the relevant organizations were similarly organized and administered under the National Incident Management System, the lack of an operational mass search and rescue plan resulted in notable shortcomings. Largely as a result of confusion over roles and responsibilities, the New Orleans Fire Department and Police Department units and FEMA urban search and rescue teams were ill-equipped and under-prepared to execute their responsibilities.

In the context of Hurricane Katrina search and rescue operations, the presence of a robust common structure and set of norms would be indicated by a variety of factors. First, search and rescue organizations would employ similar command structures to facilitate coordination. Second, search and rescue organizations would use common maps and a shared grid system. Third, these organizations would share similar standard operating procedures that would facilitate tacit coordination. By this standard, search and rescue organizations largely shared common structure and norms.

Significantly, no plan for mass search and rescue operations existed prior to Hurricane Katrina. The National Response Plan included an annex addressing Urban Search and Rescue, but this was largely inapplicable during Hurricane Katrina since urban search and rescue focuses primarily on the technical challenges of operating in an

urban environment littered with collapsed buildings and infrastructure. However, due to

the military and paramilitary disposition of each of the organizations involved in the

search and rescue response, common structures and norms were widely shared. For

example, the Coast Guard, Louisiana National Guard, Wildlife and Fisheries, New

Orleans Police Department, and New Orleans Fire Department, used National Incident

Management System or "National Incident Management System-like" structures to

maintain command and control. Furthermore, unlike staff from many other federal

departments and agencies, members of the Coast Guard were well versed in National

Incident Management System and the National Response Plan.[713] Similarly, with the

exception of the active duty military under JTF-Katrina, all search and rescue

organizations adopted a common grid system to facilitate search and rescue coordination

despite the absence of a common plan.[714]

Lastly, circumstantial evidence indicates that common standard operating

procedures existed among the search and rescue organizations involved in the Hurricane

Katrina response. Most notably, the successful establishment of joint search and rescue

field teams is indicative of a high-degree of interoperability. Second, the apparent

absence of widespread disagreement over strategy, tactics, and priorities suggests that

officials not only agreed on *what* needed to be done, but also *how* tasks should be

accomplished.

Political coordination processes

In the context of Hurricane Katrina search and rescue operations, political

coordination would only be required when political disagreement over search and rescue

[713] "Hurricane Katrina: A Nation Still Unprepared."
[714] Ibid. 345.

priorities threatened to interfere with search and rescue operations. Although the Governor of Louisiana did refuse to place the Louisiana National Guard under a unified federal command alongside the active duty military, this dispute did not even take hold until September 2nd. Furthermore, it is far from clear that the federalization of Louisiana National Guard assets would have improved the collaborative or operational performance of the search and rescue operation. In fact, the dynamic and shifting command structure of the active duty military may have exacerbated issues further had the Louisiana National Guard been federalized. Available evidence suggests that the relative irrelevance of political coordination issues is largely a consequence of widespread agreement on the proper goals of search and rescue operations. Yet, it is not difficult to imagine how political coordination mechanisms might have been invaluable to the search and rescue mission area had an acute need for limited search and rescue resources, such as helicopters, been experienced in a second city in Mississippi or Alabama at the same time that national resources were concentrated in the vicinity of New Orleans.

FEMA

Goal agreement

During response operations in the aftermath of Hurricane Katrina, FEMA maintained a common problem definition and established shared goals with many other departments, agencies, and organizations. However, these common objectives masked severe tensions regarding how they might best be achieved.

Three recurring challenges undercut the power of shared goals to facilitate collaboration. First, a general concern regarding who would get credit for successful initiatives and who would be blamed for failings became increasingly pronounced as the

crisis wore on. This tension was most evident in intergovernmental negotiations between Louisiana state officials and federal officials. However, it was present even among the departments and agencies of the federal government, including senior officials such as FEMA Director Michael Brown and Secretary of Homeland Security Michael Chertoff.

Second, the combination of poor situational awareness, severely degraded communications, and a lack of familiarity with one another's capabilities significantly affected FEMA's collaborative capacity. Third, abundant evidence suggests that opportunities for collaboration made possible by shared goals were typically squandered by the fact that FEMA was overwhelmed and was often unable to serve as a capable or reliable partner. Similar capacity problems affected the Louisiana Office of Homeland Security and Emergency Preparedness, an essential partner in FEMA's efforts to coordinate operations in the state.

Common understanding of roles and responsibilities

FEMA and its intergovernmental emergency management partners clearly lacked a common understanding of roles and responsibilities. As discussed throughout this case study, the National Incident Management System and the National Response Plan were designed to establish common structure and norms among the organizations involved in emergency management. However, unfamiliarity among key officials and organizations at all levels of government resulted in a serious lack of common structure and norms during the Hurricane Katrina response.

Poor understanding of the new National Response Plan and the incomplete adoption of the National Incident Management System seriously undermined collaborative performance. This problem was most severe within the State of Louisiana,

affecting organizations including the Louisiana Office of Homeland Security and Emergency Preparedness, which had to hire consultants to deliver a crash-course on National Incident Management System and the National Response Plan after landfall. However, even officials at FEMA were sometimes uncommitted to the National Response Plan. For example, Director Michael Brown willfully disregarded key elements of the National Response Plan that his agency was responsible for developing and promoting.[715] Adoption of National Incident Management System was stronger among military and paramilitary organizations at all levels of government, including the Coast Guard, Wildlife and Fisheries, New Orleans Fire Department, and New Orleans Police Department.

Political coordination processes

The absence of political coordination mechanisms in the National Response Plan and National Incident Management System bifurcated politics from policy and resulted in unnecessary delay and confusion regarding essential decisions. Scholars including Howitt, Leonard, and Kayyem argue that successful emergency management, especially in the context of catastrophes, requires a high degree of political coordination.[716] Appointed officials and professionals often find themselves making profound decisions affecting priorities and the distribution of resources, sometimes with life-and-death implications. As a result, effective and efficient emergency management often requires the legitimacy that only elected officials can bestow.

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[715] "A Failure of Initiative." 131-146.

[716] Kayyem, "The Game Changer: One Year Ago Today, Politics Collided with Disaster."; Howitt and Leonard, "Beyond Katrina: Improving Disaster Response Capabilities."

Indicators of effective political coordination during the Hurricane Katrina response would include the existence of a forum or process for political coordination among the Federal Coordinating Officers and state and local elected officials, evidence of trusting relationships among elected officials, and the relative absence of political conflict hindering response operations and the prompt resolution of conflicts that did emerge. By this standard, political coordination during the Hurricane Katrina response was weak.

First, the institutional frameworks ostensibly governing incident response, the National Incident Management System and the National Response Plan, are largely silent on political coordination mechanisms.[717] As a result, political coordination was ad-hoc, informal, and inconsistent. Confusion regarding the role of federal officials including the Secretary of Homeland Security, Director of FEMA, Principal Federal Official, three Federal Coordinating Officers, and the commander of Joint Task Force-Katrina, exacerbated the situation further. Not only was there no coherent process for political coordination, it was not even clear who should be involved. Arguably, it was not until September 21st, when Coast Guard Admiral Thad Allen assumed control of the federal response and was granted the "dual-hat" roles of tri-state Federal Coordinating Officer and Principal Federal Official, that a functional system of political coordination was achieved.[718] Even then, the system was ad-hoc and heavily dependent on the leadership of a specific individual.

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[717] This flaw in the National Response Plan and the National Incident Management System is widely acknowledged in the literature on emergency management. For example, see: Juliette Kayyem, "National Preparedness Leadership Initiative Class Slides on Deepwater Horizon," (2011); Kayyem, "The Game Changer: One Year Ago Today, Politics Collided with Disaster."

[718] Peter Baker, "FEMA Director Replaced as Head of Relief Effort," *Washington Post*, September 10, 2005.

Second, persistent miscommunication and confusion contributed to the relative absence of trust among key political officials in Louisiana. As detailed in the chronology, Louisiana Governor Kathleen Blanco and FEMA Director Michael Brown experienced a variety of misunderstandings and disagreements. Even within DHS, key leaders including Director Brown and Secretary Chertoff were openly contemptuous of one another.[719] This acrimony among appointed federal officials compromised efforts to achieve political coordination at the intergovernmental level by creating a climate of poor information sharing.

FEMA's relationships with local officials were, by design, typically indirect and mediated by state officials. However, FEMA did take the unusually proactive step of forward-deploying FEMA officials to emergency operations centers in many of the most severely affected parishes.[720] In general, essential relationships, like those with New Orleans Mayor Ray Nagin's office were characterized by confusion and varying levels of distrust. FEMA's inability to make good on some of its promises over the course of the first week of the crisis contributed mightily to this dynamic.

Lastly, political disputes that did emerge were not typically resolved quickly or through a uniform process. For example, federal, state, and local disagreement over the timing of hurricane evacuations from New Orleans and coastal Louisiana was unresolved until New Orleans finally ordered a mandatory evacuation on August 28th, the day before landfall. Federal officials resorted to lobbying state and local officials through a variety of methods, including a presidential appearance in an emergency management video teleconference and direct calls by National Hurricane Center Director Max Mayfield to

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[719] "Hurricane Katrina: A Nation Still Unprepared;" "A Failure of Initiative."
[720] "DHS/FEMA Initial Response Hotwash: Hurricane Katrina in Louisiana, Dr-1603-LA," 81.

political officials. During response operations, disputes about the provision of buses to evacuate the Superdome had direct operational consequences that exacerbated the suffering of tens of thousands of survivors.

Chapter 5: Deepwater Horizon

"This is closer to Apollo 13 than to the Exxon Valdez."
Admiral Thad Allen, former Commandant of the U.S. Coast Guard and national incident commander for the Deepwater Horizon catastrophe[721]

This case study describes the Deepwater Horizon catastrophe and the role of the Coast Guard responding to it. It begins with an overview of the scope and scale of the catastrophe; examines plans and policies in place to facilitate an emergent, networked response; and then recounts how the response unfolded in actuality. The chapter concludes with a comparative analysis of the discrepancies between expectations of collaborative performance and the observed realities.

Chapter seven applies the theoretical framework developed in chapter two to evaluate why collaborative outcomes occurred. This chapter systematically analyzes how specific inter-organizational and intergovernmental factors affected the efforts of FEMA and the Coast Guard to collaborate during the crisis.

Disaster Overview

Only minutes after delivering unusual pressure readings, the drilling pipe aboard the Deepwater Horizon, a technologically advanced deepwater drilling rig stationed 42 miles Southeast of Venice, Louisiana, began spewing drilling mud onto the floor of the rig.[722] It was already too late. Highly explosive gas was rocketing up the drill pipe from the wellhead 5,000 feet below the surface, expanding as it accelerated to the rig floor.

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[721] Eugene Robinson, "For Admiral Thad Allen, a Three-Front War on Oil," *Washington Post*, June 1, 2010.
[722] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," (National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, 2011), 114.

Moments later, the Deepwater Horizon was rocked by a powerful explosion and engulfed in flames.

The lives of 11 workers ended instantly. The Deepwater Horizon mobile offshore drilling unit burned for another two days before listing on its side and sinking to its final resting spot 1,300 feet from the Macondo wellhead on the seafloor.[723] Unfortunately, the tragedy did not end there. The violence of the blowout damaged the sophisticated infrastructure at the wellhead causing three massive and uncontrolled leaks that would spew oil for the next 87 days.[724] The Deepwater Horizon catastrophe is the story of an acute technological accident instigating a seemingly endless environmental catastrophe.

Initial estimates suggested that oil was streaming from the wellhead at a rate of 1,000-5,000 barrels per day. In fact, the actual rate is now estimated to have begun around 62,000 barrels per day, gradually dropping to 53,000 barrels per day as pressure levels within the sub-sea reservoir dissipated with the escaping oil.[725] Over the course of the incident, the uncontrolled wellhead released more than 4.9 million barrels of oil into the fragile Gulf Coast, creating and then sustaining a spill that stretched across the shorelines of five states, causing tens of billions of dollars in economic losses.[726]

Deepwater Horizon presents an informative case study in crisis collaboration and an insightful contrast to the Hurricane Katrina case study. Like Katrina, the geographic scope of the Deepwater Horizon catastrophe required a massive and coordinated response across multiple states and regions.

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[723] The "Deepwater Horizon" is the name of the mobile offshore drilling unit that exploded and sank to the seafloor in April 2010. "Macondo" is the name of the wellhead where the Deepwater Horizon was drilling at the time of the incident.

[724] "On Scene Coordinator Report Deepwater Horizon Oil Spill," (2011), xiv.

[725] Ibid. 33.

[726] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling."; "On Scene Coordinator Report Deepwater Horizon Oil Spill," 33.

Figure 19: Responders and vessels involved in Deepwater Horizon response operations over time[727]
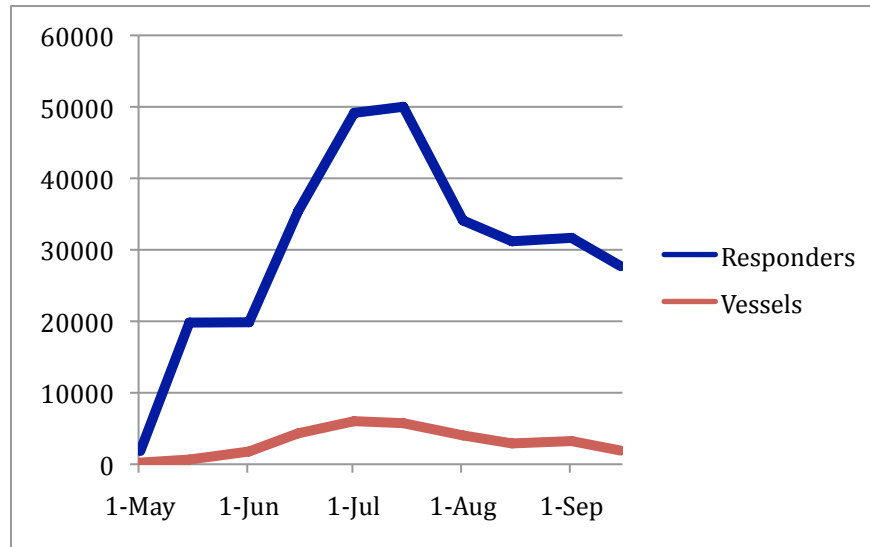
Second, as the most catastrophic oil spill in history, the response required

expansive collaboration among the approximately 1,000 organizations involved in the

response.[728] In fact, BP's own after-action report identified the pivotal importance of

inter-organizational collaboration, calling for "new and strengthened collaborative

relationships spanning government, industry and a range of stakeholders, from around the

globe."[729] At its peak, the response involved dozens of federal, state, and local agencies,

eight exploration and production operators, hundreds of industry suppliers, six deepwater

drilling vessels, 150 aircraft, and partners from 19 countries, all working through five

Incident Command Posts and 19 Branches.[730] Over the course of the response, more than

9,000 vessels—a fleet larger than the Allied landing force in D-Day during World War II

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[727] Data derived from: "On Scene Coordinator Report Deepwater Horizon Oil Spill." Appendix.
[728] Ibid. xiv.
[729] "Deepwater Horizon Containment and Response: Harnessing Capabilities and Lessons Learned," (BP, 2010), 1, 70.
[730] Ibid. 63.

and nearly three times the number of vessels in the entire Coast Guard—participated in the response.[731] On the single most demanding day of the response, over 6,000 vessels, 102 fixed wing and rotary aircraft, and 47,849 personnel worked together across five states and many thousands of square miles of ocean.[732]

Third, the Deepwater Horizon catastrophe presented policymakers with a complex and novel crisis. The location and depth of the wellhead and technical complexity inherent in deepwater drilling presented profound challenges that required critical thinking, creativity, learning, and intensive collaboration. The wellhead lies beneath 5,000 feet of water and then extends another 13,000 feet below the seafloor where it pierces a reservoir containing an estimated 110 million barrels of oil.[733]

However, the Deepwater Horizon catastrophe did differ from the Hurricane Katrina catastrophe in at least one important way: the response to the two disasters was governed by different philosophies, laws, and plans. The Hurricane Katrina response was governed through a "bottom-up" governance system wherein the Federal Government supported state and local responders on an as-needed basis, as directed in the Stafford Act and National Response Framework.[734] The Deepwater Horizon response was governed by a "top-down" structure wherein the Federal Government supervised and directed the response activities of state and local governments and the "responsible party," as mandated by the Oil Pollution Act of 1990 (Oil Pollution Act) and the National

[731] "On Scene Coordinator Report Deepwater Horizon Oil Spill," 118.

[732] Ibid. v-vi.

[733] "Stopping the Spill: The Five-Month Effort to Kill the Macondo Well," (Washington, DC: National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, 2011), 2.

[734] The National Response Framework replaced the National Response Plan in January 2008. The National Response Framework incorporates lessons learned from Hurricane Katrina and other incidents, provides doctrine, and outlines roles and responsibilities in order to support national comprehensive emergency management.

Contingency Plan. Together, these cases provide an opportunity to observe the effects of these alternative approaches to domestic incident management on collaborative performance.

Of Chance and Consequence

The drilling community and those responsible for overseeing it systematically under-prepared for the possibility of a catastrophic wellhead blowout because they collectively misjudged its likelihood and failed to plan appropriately for the potential fallout. Three factors contributed to the misperception of the likelihood of a catastrophic contingency.

First, although the possibility of a catastrophic wellhead blowout was generally recognized prior to the explosion aboard the Deepwater Horizon, it was deemed highly improbable.[735] Over the course of the last four decades, the number of oil spills and volume of releases has decreased dramatically. This decline is largely explained by international oil pollution standards that went into effect in 1983 and Oil Pollution Act.[736] Paradoxically, the relative success of Oil Pollution Act in preventing oil spills through stronger hull design requirements and other measures may have contributed to systemic under-investment in the development of new response technologies, equipment, and capacity.

Figure 20: The decreasing incidence of oil spills over time[737]

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[735] In many respects, the risk of a catastrophic wellhead blowout is a classic example of a "black swan event." For an exposition on the "black swan" concept, see: Nassim Taleb, *The Black Swan: The Impact of the Highly Improbable* (New York: Random House and Penguin, 2010).
[736] Jonathan L. Ramseur, "Oil Spills in U.S. Coastal Waters: Background, Governance, and Issues for Congress," (Washington, DC: Congressional Research Service, 2008). 2.
[737] Ibid.
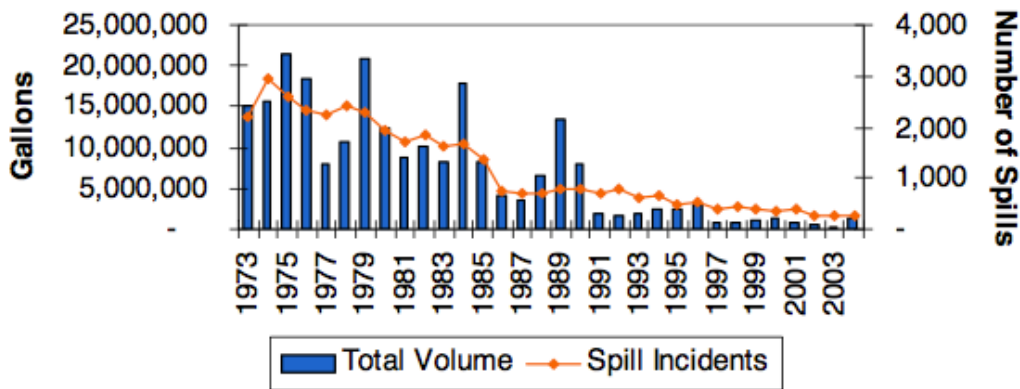
Although there were 79 reported "loss of well control incidents" between 1996

and 2009, catastrophic blowouts are exceedingly rare.[738] Between 1981-2001 in the

United States, there were no spills larger than 1,000 barrels of oil attributed to offshore

platforms.[739] From 2001 to 2008, there were only six incidents and none resulted in a

release of more than 2,000 barrels. Blowouts that do occur are often serious but not

catastrophic. For example, when the Montara rig suffered a blowout off the northern

Australian coastline in August of 2009, the incident occurred in shallow water and

resulted in a flow rate that was only a small fraction of that of the Deepwater Horizon.[740]

The closest parallel to the Deepwater Horizon incident was the Ixtoc I blowout off the

Mexican coast, 600 miles south of the Texas border, in 1979.[741] A wellhead blowout only

164 feet below the sea's surface collapsed the drilling rig atop the wellhead, obstructing

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[738] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 226.
[739] Ramseur, "Oil Spills in U.S. Coastal Waters: Background, Governance, and Issues for Congress."
[740] Curry L. Hagerty and Jonathan L. Ramseur, "Deepwater Horizon Oil Spill: Selected Issues for Congress," (Washington, DC: Congressional Research Service, 2010), 24.
[741] Despite tremendous advances in deepwater drilling technology in the intervening years, the same methods used to control the Ixtox I wellhead would also be used 31 years later to respond to the Deepwater Horizon incident. "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," (Washington, DC: U.S. Coast Guard, 2011), 109-110.

efforts to cap the well for 10 months, resulting in the release of 3.7 million barrels of oil.[742]

Second, oil and drilling companies, including BP and Transocean, employed a variety of systems, technical measures, and procedural safeguards to prevent, detect, and contain blowouts should they occur. As the history of technological accidents attests, humans regularly under-estimate the likelihood of "complex systems failing in complex ways."[743] Third, regulators led by the Minerals Management Service and Coast Guard, provided oversight and legitimacy to industry practices that explicitly and implicitly under-stated the risk of blowouts.

Equally important, the consequences of a wellhead blowout were dramatically under-appreciated. Although BP's government-approved plans accurately gauged the "worst case discharge" possible in a blowout, they dramatically over-estimated the effectiveness of existing oil recovery methods, such as skimming. A hazardous release on the scale of the Deepwater Horizon catastrophe was nearly unprecedented. The worst oil spill in the United States prior to this event was the 1989 Exxon Valdez incident, releasing at least 250,000 barrels of oil into Prince William Sound in Alaska.[744]

As a result of ill-informed probabilities and predictions, Federal, State, and local governments and members of the oil industry did not invest in preparedness assets and activities to the extent that prudence would dictate prior to the Deepwater Horizon

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[742] Campbell Robinson, "Efforts to Repel Gulf Oil Spill Are Described as Chaotic," *New York Times*, June 14, 2010 2010; "Incident News: Ixtoc I," National Oceanic and Atmospheric Administration: Office of Response and Restoration, http://www.incidentnews.gov/incident/6250, Accessed July 30, 2012.

[743] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," viii; Charles Perrow, *Normal Accidents: Living with High Risk Technologies*, 2nd ed. (Princeton, NJ: Princeton University Press, 1999).

[744] Anne C. Mulkern, "BP's Oil Spill Bill Could Dwarf Exxon's Valdez Tab " *New York Times*, May 3, 2010.

catastrophe. The consequences of this under-preparedness were missed opportunities to prevent the disaster, a lack of tools and techniques to contain a deepwater release, delays in the response, unnecessary loss of life, and devastating economic and environmental damage.

Collaborative Performance Expectations

The United States maintains two overlapping approaches to domestic incident management. Homeland Security Presidential Directive-5 establishes a governance framework for all domestic incidents including acts of nature, accidents, and acts of terrorism. This framework, including elements such as the National Incident Management System and National Response Plan (2005) was discussed in the previous case. Distinct doctrine guides national response to oil spills. The National Response System, articulated in statute and regulation, specifies structures and processes for response to oil spills and hazardous substance releases specifically.[745]

Homeland Security Presidential Directive-5, the National Incident Management System, and the National Response Framework[746]

Homeland Security Presidential Directive-5 was signed by President George W. Bush in February 2003 and called for the establishment of "a single, comprehensive approach to domestic incident management." Accordingly, the Department of Homeland Security (DHS) developed the National Incident Management System and the National Response Plan. The National Incident Management System is a "management by objectives" system designed to enable organizations to work together in a collaborative,

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[745] Thad Allen, "National Incident Commander's Report: Mc252 Deepwater Horizon," (Washington, DC: National Incident Command, Deepwater Horizon Response, 2010), 3.
[746] Note: Homeland Security Presidential Directive-5 has been updated and renamed Presidential Policy Directive-8 in 2011: "Presidential Policy Directive-8: National Preparedness."

consensus-driven environment and was discussed extensively in previous chapters.[747] In

the aftermath of the halting response to Hurricane Katrina, the National Response Plan

was amended in 2006 and replaced in January 2008 with the National Response

Framework. The National Response Framework,

> provides the administrative policies and guiding principles for a unified response
> from all levels of government, and all sectors of communities, to all types of
> hazards through the combined scope of the various federal response plans that it
> incorporates.[748]

Like the National Response Plan that it replaced, the National Response Framework

includes 15 emergency support functions, which coordinate the roles and resources of

government and non-governmental entities. Notably, the National Response Framework

is not an executable operational plan, but rather a governance system and body of

doctrine. Policymakers across the Gulf Coast are generally familiar with the National

Response Framework as a result of the incidence of hurricanes within the region and are

accustomed to the federal deference to state and local initiative that it enshrines.

The National Contingency Plan governs all oil spills and affords a designated

federal official the power to direct all response actions. Throughout the Deepwater

Horizon response, officials at all levels of government experienced "extensive confusion"

between the National Response Framework and National Contingency Plan.[749]

Under Homeland Security Presidential Directive-5, the Secretary of Homeland

Security serves as the president's personal representative for incident management, and is

designated as the Principal Federal Official. However, Homeland Security Presidential

Directive-5 did not supersede the Oil Pollution Act and the governance structure that it

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[747] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 92.

[748] Hagerty and Ramseur, "Deepwater Horizon Oil Spill: Selected Issues for Congress," 9-10.

[749] R.J. Jr. Papp, "Final Action Memorandum - Incident Specific Preparedness Review (ISPR) Deepwater Horizon Oil Spill," ed. U.S. Coast Guard (2011), 8.

provides for oil spill response. Crucially, these two governance structures were never reconciled, resulting in confusing overlap.

The Oil Pollution Act of 1990 and the National Contingency Plan

The Oil Pollution Act was the first comprehensive law to address maritime oil pollution in the United States and simultaneously expanded federal response authority and increased spill liabilities for polluters.[750] Prior to the Oil Pollution Act, a patchwork of federal statutes and regulations governed national and private sector oil spill prevention, preparedness, and response. The terrible fallout of the Exxon Valdez oil spill of 1989 spurred dramatic reform of the national approach to the challenges posed to the national welfare by the burgeoning oil industry and resulted in the passage of the Oil Pollution Act.

The Oil Pollution Act established the National Response System. The National Response System applies to all hazardous materials releases across inland and offshore maritime environments and provides an elaborate governance system to precipitate and sustain a collaborative response. The key components of the National Response System include a set of national and regional teams, a hierarchy of integrated plans, and a top-down command and control structure. The narrative that follows describes how collaboration should have been carried out in the aftermath of the Deepwater Horizon incident according to established policy, plans, and doctrine.

National, Regional, and Local Teams and Committees

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[750] Ramseur, "Oil Spills in U.S. Coastal Waters: Background, Governance, and Issues for Congress."

The Oil Pollution Act established two types of teams and one network of local committees.[751] The National Response Team is an organization of sixteen federal departments and agencies responsible for coordinating emergency preparedness and response to oil and hazardous substance releases. The National Response Team maintains oil spill response policy and supports incident response through resource brokering and the provision of expertise.

Regional Response Teams are composed of regional representatives of each National Response Team member agency and state and local officials. The Regional Response Teams consist of a standing team, which pre-establishes response policy—such as rules governing the regional use of dispersants and in-situ burning techniques—and coordinates the integration of more local response plans across the region. In the event of an incident within the designated region, the Regional Response Team will activate an incident-specific team from the ranks of the standing team to work under the leadership of the Coast Guard to assist in response efforts.

Area Committees are established in each Coast Guard sector to produce and maintain Area Contingency Plans. Area Contingency Plans are operational plans to guide response operations in the event of an incident. They specify environmentally sensitive areas in need of protection, outline booming strategies, and pre-identify potential response resources.

National, Regional, and Area Contingency Plans

Mirroring the team and committee structure, the Oil Pollution Act establishes three tiers of planning documents. The National Contingency Plan was first established in

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[751] Hagerty and Ramseur, "Deepwater Horizon Oil Spill: Selected Issues for Congress," 8.

1968 following a 37 million gallon oil spill off the shores of England. Unlike the National Response Framework, which is an interagency framework developed through executive authority, the National Contingency Plan is codified in law and regulation. The National Contingency Plan details Federal Government procedures for responding to oil spills and was modified by the Clean Water Act of 1972; the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (or Superfund Act); the Oil Pollution Act of 1990; and a series of amendments enacted in 1994 in the aftermath of the Exxon Valdez oil spill.[752]

The National Contingency Plan requires the Coast Guard to supervise offshore oil-spill response. The National Contingency Plan designates a responsible party as the entity financially liable for the consequences of the spill and dictates that the responsible party must execute response operations at the direction of the federal on-scene coordinator. The responsible party bears the full costs of response operations in addition to any assessed damages. The responsible party, often through standing contracts with private oil-spill removal organizations, provides oil spill response equipment and capacity. In the case of the Deepwater Horizon incident, BP designated the Marine Spill Response Corporation and other private oil-spill removal organizations that could conceivably recover nearly 500,000 barrels per day.[753]

The National Contingency Plan directs the Coast Guard to collaborate with federal, state, and local officials to develop Regional Contingency Plans to coordinate

[752] Ramseur, "Oil Spills in U.S. Coastal Waters: Background, Governance, and Issues for Congress," 7-8.
[753] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling,"132.

policy and operational planning among the port zones within each region. In practice, these plans are not always consistent with one another.[754]

Each Coast Guard Captain of the Port leads the development of area contingency plans through the interagency and intergovernmental Area Committees. The area contingency plan is required "to be adequate to remove a worst case discharge of oil or a hazardous substance, and to mitigate or prevent a substantial threat of such a discharge from a vessel, offshore facility, or onshore facility operation."[755] Each Area Committee is required to work with state and local officials to plan a collaborative response and establish common understandings regarding environmentally sensitive areas, shoreline protection strategies, dispersant use, in-situ burning, and other response options.[756]

In theory, government-required Vessel Response Plans and Facility Response Plans should be consistent with and complementary to the area contingency plan, but this was not the case in the Gulf Coast in 2010.[757] Although the BP Oil Spill Response Plan was approved by the Minerals Management Service (later re-named the Bureau of Ocean Energy Management, Regulation and Enforcement), the Deepwater Horizon Mobile Offshore Drilling Unit Vessel Response Plan was approved by the Coast Guard.[758] Neither was integrated with the relevant area contingency plans and neither proved particularly useful.

Oil Spill Command and Control Roles and Structures

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[754] "Decision-Making within the unified command," (Washington, DC: National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, 2011).
[755] Papp, "Final Action Memorandum - Incident Specific Preparedness Review (ISPR) Deepwater Horizon Oil Spill," 12.
[756] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review." 12.
[757] Ibid. 16.
[758] Ibid. 26.

The Oil Pollution Act also establishes an elaborate command and control apparatus to ensure unity of effort during response operations. In the event of an incident offshore, the local Coast Guard Captain of the Port, who is also the head of the Area Committee, assumes overall direction of response operations and is designated the federal on-scene coordinator.[759] In a typical response, the federal on-scene coordinator supervises response efforts while the responsible party conducts and funds them. When a particular incident poses a "substantial threat" to public health or welfare, the National Contingency Plan requires the federal on-scene coordinator to *actively direct* all response efforts.[760] The federal on-scene coordinator has four statutory responsibilities:

- Providing access to federal resources and technical assistance;
- Coordinating all federal containment, removal, and disposal efforts and resources during the oil spill;
- Serving as the point-of-contact for coordination of federal efforts with the local response community; and
- Coordinating, monitoring, and directing response efforts.[761]

**Figure 21: Deepwater Horizon incident response command structure[762]**

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[759] If a hazardous substance release occurs inland, a representative of the Environmental Protection Agency becomes the federal on-scene coordinator.
[760] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 134.
[761] Allen, "national incident commander's Report: Mc252 Deepwater Horizon," 13.
[762] Ibid.

Overall SONS Organizational Chart
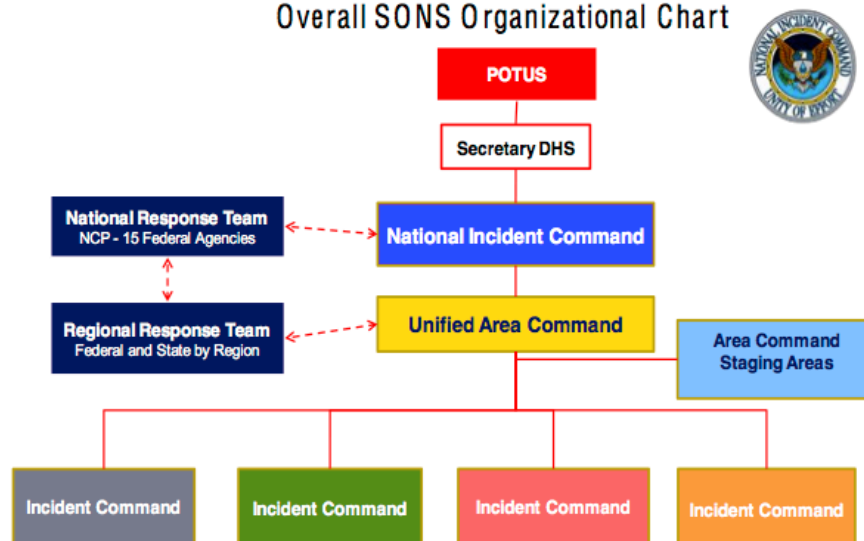
The unified area command is managed by the federal on-scene coordinator and includes State On-Scene Coordinators from affected states and the responsible party. State On-Scene Coordinators direct state response agencies in coordination with the federal on-scene coordinator. The unified area command is the operational hub of oil spill response operations and directs field operations through a network of incident command posts and branches. During Deepwater Horizon response operations, the unified area command coordinated the efforts of the incident command posts, serves as a national information center for the media, distributed critical resources across the incident command posts, and ensured the flow of information to the national incident commander.[763]

Incident command posts are established in the vicinity of the oil spill and direct response operations in a designated area. Within each area, branches, or forward operating bases, are established to execute oil spill response operations. Branches often

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[763] Charles R. Epperson, "A perspective from within Deepwater Horizon's Unified Command Post Houma " in *Working Paper* (Center for Catastrophic Risk Management Deepwater Horizon Study Group, , 2011), 8.

specialize in a particular aspect of response operations, such as offshore operations (e.g. dispersant use), near-shore operations (e.g. laying boom), or on-shore operations (beach clean-up).

The Oil Pollution Act also establishes special governance arrangements for the most catastrophic hazardous material releases. The Secretary of Homeland Security can designate an incident to be a Spill of National Significance,

> due to its severity, size, location, actual or potential impact on the public health and welfare of the environment, or the necessary response effort, is so complex that it requires extraordinary coordination of federal, state, local, and responsible party resources to contain and clean up the discharge.[764]

The spill of national significance designation establishes a national incident commander to "assume the role of the federal on-scene coordinator in communicating with affected parties and the public, and coordinating federal, state, local, and international resources at the national level."[765] The purpose of the national incident commander is to support the federal on-scene coordinator by addressing strategic issues, coordinating political decision-making, providing public communications services, and brokering resources at the national level.[766]

This sparse guidance leaves the national incident commander great leeway to define the scope of his or her role in incident management. In the case of Deepwater Horizon, Admiral Thad Allen determined that the National Incident Command organization would serve as a national coordination and communications center to deal with high-level political and media concerns in order to enable the unified area command

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[764] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 136.
[765] Ibid. 136.
[766] "Bp Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 79.

and incident command posts to focus on operational matters.[767] In the case of the Deepwater Horizon, the national incident commander coordinated interagency efforts and managed political and media inquiries while the federal on-scene coordinator more directly oversaw daily operations.[768]

The command relationships between the White House, Secretary of Homeland Security (acting as Principal Federal Official), national incident commander, National Incident Command organization, unified area command, and incident command posts are analogous to a corporate governance model: the White House and Cabinet provide strategic direction like a board of directors; the Secretary of Homeland Security, in her capacity as Principal Federal Official, serves as a chief executive officer; the national incident commander acts as chief operating officer, and the federal on-scene coordinator and incident command post commanders function as senior vice presidents.[769]

Envisioning a collaborative response

In order to understand how crisis collaboration can be improved, it is important to determine whether or not collaborative shortcomings are the outcome of failed plans and policy, execution, or both. To this end, it is a worthwhile exercise to envision what a collaborative response—as detailed in existing plans and policy—would have looked like and then to compare that to what is observable in the historical record.

During Deepwater Horizon response operations, the Coast Guard was particularly active in three of its assigned mission areas: search and rescue, marine environmental

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[767] "Decision-Making within the unified command," 5.
[768] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 136.
[769] "Bp Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 63.

protection, and management of maritime commerce.[770] This analysis will examine Coast

Guard collaborative performance related to marine environmental protection.

The Coast Guard is designated as the lead agency in the Federal Government for

marine environmental protection. Marine environmental protection includes averting the

introduction of invasive species, stopping unauthorized ocean dumping, and managing

offshore hazardous material releases.[771] The Oil Pollution Act designates the Coast

Guard as the lead agency responsible for executing the National Contingency Plan for

offshore oil spills. Under this plan, the Coast Guard co-chairs the National Response

Team alongside the Environmental Protection Agency. The Coast Guard is responsible

for coordinating the efforts of Coast Guard units with other federal, state, and local

responders and the party responsible for the hazardous materials release.

According to the Oil Pollution Act, National Response System policies, and the

National Contingency Plan, the Coast Guard should have employed a variety of

institutions to facilitate collaboration. First, the Coast Guard should have promptly

designated a federal on-scene coordinator. Second, the federal on-scene coordinator

should have promptly elevated the response to include the declaration of a Spill of

National Significance and designation of a national incident commander. Third, the Coast

Guard should have implemented regional and area contingency plans and vessel-specific

plans to expedite the collaborative response. Fourth, the national incident commander

should have actively directed the response actions of the responsible party as the scope of

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[770] "Coast Guard: Observations on the Preparation, Response, and Recovery Missions Related to Hurricane Katrina."

[771] "Annual Review of the United States Coast Guard's Mission Performance," (Washington, DC: Office of Inspector General, Department of Homeland Security, 2011) 20.

the catastrophe became clearer. Fifth, the national incident commander should have coordinated federal interagency support through the National Response Team.
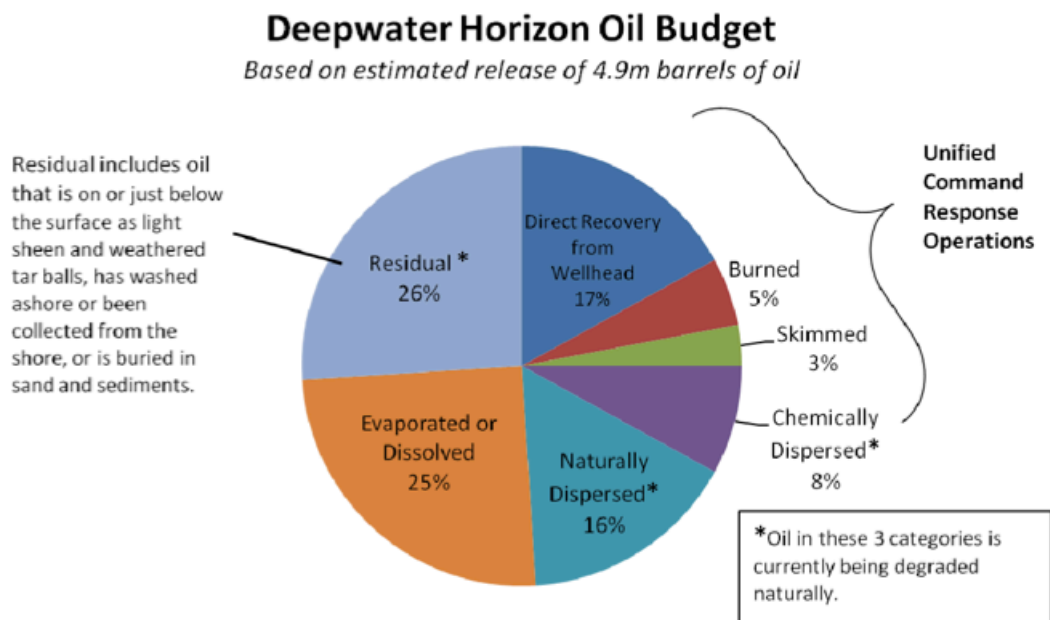
The chronology that follows generally supports the conclusion that the Coast Guard exhibited high collaborative performance during its response to the Deepwater Horizon incident. However, it illuminates a number of departures from established policy, valuable innovations, and many shortcomings and missed opportunities. Most notably, the National Contingency Plan and its subsidiary area contingency plans were poorly understood and the institutions required to accommodate a top-down response in the context of the "home rule economy" of the Gulf Coast were not present during the early stages of the crisis.

However, it is clear that the collaborative efficiency of the Coast Guard increased significantly with time as a result of organizational learning and adaptive leadership. Even if many of the problems plaguing the early response could have been avoided through better institutional design and preparedness, these shortcomings were overcome with time. Most importantly, Coast Guard leadership and institutions proved decisive in maintaining the integrity of a collaborative interagency and intergovernmental response. The Coast Guard maintained credibility by virtue of its capabilities, initiative, and competence. As a result, it developed trust among responding entities and retained the ability to serve as a collaborative partner throughout the crisis.

The Coast Guard response to the Deepwater Horizon incident was also a qualified operational success. The Coast Guard led the recovery, dispersal, or elimination of 33% of the 4.9 million barrels of oil released in the Deepwater Horizon incident. Moreover, Coast Guard decision-makers such as Admiral Thad Allen directed a deliberate effort to

stop the flow of oil at its source through innovation and ingenuity that carefully balanced

the benefits of success against the risks of provoking still greater disaster. Lastly, the

Coast Guard effectively managed one of the largest, most complicated, and sustained

response efforts in the history of the United States without suffering any serious accidents

or loss of life.

Figure 22: unified command responders successfully recovered, burned, or dispersed one third of the oil that escaped from the wellhead.[772]

Deepwater Horizon Oil Budget
Based on estimated release of 4.9m barrels of oil

Residual includes oil that is on or just below the surface as light sheen and weathered tar balls, has washed ashore or been collected from the shore, or is buried in sand and sediments.

Residual * 26%
Direct Recovery from Wellhead 17%
Burned 5%
Skimmed 3%
Chemically Dispersed* 8%
Evaporated or Dissolved 25%
Naturally Dispersed* 16%

Unified Command Response Operations

*Oil in these 3 categories is currently being degraded naturally.

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772 Jane Lubchenco et al., "BP Deepwater Horizon Oil Budget: What Happened to the Oil?" (Washington, DC: National Oceanic and Atmospheric Administration, 2010).

Collaborative Performance in Execution: A Crisis Chronology

The Deepwater Horizon catastrophe can be divided into three stages: the blowout and initial response from April 20-23[rd], the seeping crisis from April 24-July 14[th], and the sealing of the wellhead, from July15-October 1[st]. This chronology provides an overview of the Deepwater Horizon catastrophe as it unfolded. Analysis of the causes of the technological accident precipitating the broader environmental crisis is beyond the scope of this report. Other studies, including the *National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling*, address the proximal and systemic causes of the technological accident aboard the Deepwater Horizon in great detail.

Phase I: Blowout and Initial Response, April 20-23

April 20, Day 1

At approximately 9:49pm Central Standard Time, the Deepwater Horizon drilling rig was rocked by a massive explosion.[773] After a chaotic evacuation, 115 of the 126 crewmembers aboard the Deepwater Horizon were accounted for. Seventeen were med-evaced from the decks of rescue vessels and the search for the 11 missing crew-members began immediately.[774] Coast Guard helicopters from the Marine Safety Unit in Morgan City, Louisiana, and the Coast Guard Cutter *Pompano* were dispatched to conduct search and rescue operations in the hopes of saving the eleven missing crewmembers.[775] Shortly after the explosion, the Marine Spill Response Organization, an entity contracted by oil

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[773] "On Scene Coordinator Report Deepwater Horizon Oil Spill." 201; "Deepwater Horizon Accident Investigation Report," (BP, 2010), 29.

[774] Epperson, "A perspective from within Deepwater Horizon's Unified Command Post Houma," 2.

[775] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 130.

and drilling firms for response contingencies, dispatched four skimmers to the site of the disaster.[776]

April 21, Day 2

At 10:00am, Coast Guard aircraft conducting search and rescue operations discovered a "variably-colored" sheen, two miles long by half a mile wide near the disaster site.[777] Initial estimates suggested that only about 30 gallons of oil contaminated the water.[778] This was the first indication of a brewing environmental catastrophe and the beginning of the transition from a conventional search and rescue operation to an unconventional environmental emergency.

The gravity of the situation was becoming clearer at BP headquarters in Houston, Texas. In addition to seeking to recover its missing personnel, save the remnants of the Deepwater Horizon rig, and stop the leak at its source, BP began searching for available drilling rigs to construct a relief well, the only permanent solution to a blown-out wellhead. Even then, it would be over three months before the first relief well could intercept and plug the out-of-control Macondo wellhead.

Captain of the responding Marine Safety Unit, Joseph Paradis, assumed the responsibilities of federal on-scene coordinator and activated the National Contingency Plan.[779] Representatives from the Coast Guard, National Oceanic and Atmospheric Administration, Department of the Interior, and the Environmental Protection Agency, in cooperation with state and local authorities, activated the Regional Response Team to implement response plans, provide technical advice to responders, access resources and

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[776] Ibid. 132.
[777] Ibid. 130.
[778] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 111.
[779] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 130.

equipment, and oversee BP's response.[780] From the beginning of the spill, pre-designated state on-scene coordinators for Louisiana, Alabama, and Mississippi participated in the unified command. These officials were familiar with the National Contingency Plan and regional area contingency plans.[781] However, in coming days, these knowledgeable officials were shunted aside by state and local political officials who were less familiar with existing plans and more concerned with the politics of disaster response.

As the size of the spill gradually expanded and the scope of the Coast Guard response swelled, Rear Admiral Mary Landry took over as federal on-scene coordinator. Admiral Landry was commander of Coast Guard District Eight, which spans the Gulf Coast from Texas to the Florida panhandle. At about the same time, the Coast Guard established an informal presence at BP corporate headquarters in Houston, Texas, to monitor the firm's efforts to stem the uncontrolled well.[782]

Transocean, the owner of the Deepwater Horizon rig, hired Smit Salvage America to fight the fire aboard the rig with specialized craft and equipment. At the scene, Transocean and Smit Salvage America battled the blaze as the Coast Guard focused its resources on search and rescue and evaluating and containing the environmental effects of the spill.[783] At 8:00pm, BP and Transocean deployed remotely operated vehicles to try to manually close the leaking well at its source by engaging mechanisms on the blowout preventer at the wellhead. Officials from the Minerals Management Service observed

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[780] "On Scene Coordinator Report Deepwater Horizon Oil Spill," 203.
[781] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 138.
[782] Ibid. 130-131.
[783] Ibid. 130.

from operations centers at Transocean and BP headquarters.[784] By the end of the day, the

rig was listing heavily and in danger of imminent submersion.

April 22, Day 3

At 10:22am, the Deepwater Horizon rig suffered another explosion and sank to

the bottom of the Gulf of Mexico.[785] The unified command included the Coast Guard,

BP, Minerals Management Service, and Transocean.[786] At the request of the Coast

Guard, the National Response Team held its first daily telephone meeting.[787] The

National Response Team held twice-daily conference calls for the first two weeks of the

crisis and daily calls until they were suspended in August.[788] As senior federal officials

from across the Federal Government became more personally involved in the crisis, it

became clear that many were unfamiliar with the National Contingency Plan, spill

response doctrine, and the role of deliberative bodies such as the National Response

Team. That evening, Secretary of Homeland Security, Janet Napolitano, and Secretary of

the Interior, Ken Salazar, briefed President Obama on the growing interagency effort to

assess and control the effects of the loss of the Deepwater Horizon.[789]

At the disaster site, the Coast Guard established air and sea restriction zones in the

vicinity of the incident.[790] The Coast Guard sprayed dispersants on the surface of the

small oil slick, marking the beginning of an unprecedented use of oil dispersants above

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[784] Ibid. 131.
[785] Epperson, "A perspective from within Deepwater Horizon's Unified Command Post Houma, "2; "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 130.
[786] Epperson, "A perspective from within Deepwater Horizon's Unified Command Post Houma," 2.
[787] Ibid. 2.
[788] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 85.
[789] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 131.
[790] "On Scene Coordinator Report Deepwater Horizon Oil Spill," 203.

and below the surface of the Gulf of Mexico over a period of 12 weeks.[791] Over the

course of the spill response, more than 1.84 million gallons of dispersants were released

into the Gulf of Mexico.[792] Although the dispersants had been pre-approved by federal

and regional experts, they remained politically unpopular and many individuals both

inside and outside of government expressed increasing concern about the volume,

persistence, sub-sea application, and long-term effects of the dispersants used in the

Deepwater Horizon response.

April 23, Day 4

Following three days of informal operations, the Coast Guard established an

unified area command, a principal headquarters for spill response, in Robert,

Louisiana.[793] This headquarters included representatives of the Federal Government,

Louisiana, Alabama, Mississippi, Florida, and BP.[794] The size, potential impact, and

complexity of the Deepwater Horizon catastrophe necessitated the formation of a

network of incident command posts governed by an overarching unified area command.

BP was an active partner in each of these command structures.[795] On April 24[th], the Coast

Guard established an incident command post in Houma, Louisiana.[796] Additional incident

command posts were later established in Mobile, Alabama, St. Petersburg, Florida,

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[791] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 143.

[792] Papp, "Final Action Memorandum - Incident Specific Preparedness Review (ISPR) Deepwater Horizon Oil Spill," 7.

[793] Senate Committee on Homeland Security and Governmental Affairs, *Deep Impact: Assessing the Effects of the Deepwater Horizon Oil Spill on States, Localities and the Private Sector*, June 10, 2010.

[794] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 131.

[795] Epperson, "A perspective from within Deepwater Horizon's Unified Command Post Houma," 6.

[796] "On Scene Coordinator Report Deepwater Horizon Oil Spill," 203.

Galveston, Texas, and Houston, Texas, to formalize oversight of BP's efforts to seal the wellhead.

At the unified area command, BP collaborated with the Minerals Management Service and Coast Guard officials to produce operational plans, which were then reviewed by the Minerals Management Service Gulf of Mexico Regional Director or his deputy and then forwarded to the federal on-scene coordinator for final approval.[797] At most, the Minerals Management Service had only four to five officials working in Houston with BP to review operational plans.

The unified area command provided strategic guidance to the network of incident command posts in the affected states.[798] A critical resource unit at the unified area command identified boom, skimmers, and certain categories of trained personnel as critical resources because of the overwhelming demand and relative scarcity of these resources among the incident command posts.[799] Over the course of the crisis, the Coast Guard struggled to deploy trained personnel to the appropriate incident command system positions and often failed to direct specially trained personnel to positions where their particular skills could be best put to use, instead saddling them with administrative duties.[800]

Another emerging problem involved the unfamiliarity of many officials with the National Contingency Plan and its component area contingency plans. Elected officials and policy-makers from organizations not normally involved in spill response planning or operations were unaware of the plans and governance arrangements pertaining to spill

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[797] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 135.
[798] Epperson, "A perspective from within Deepwater Horizon's Unified Command Post Houma," 3.
[799] Ibid. 8.
[800] Ibid. 3.

response. Given the frequency of hurricanes along the Gulf Coast, many assumed that the response would be governed by the Stafford Act and the National Response Framework, wherein the state and local governments retain primacy and the Federal Government acts in a supporting capacity. In fact, the spill was governed by the Oil Pollution Act and the National Contingency Plan, which put the Federal Government in the lead and intergovernmental and private sector responders in supporting roles. Unfortunately, confusion over plans, roles, and responsibilities was not limited to elected officials who had never concerned themselves with the particulars of oil spill response. Members of the unified area command and incident command posts were often confused about lines of authority and the authorities of the federal on-scene coordinator.[801]

To make matters worse, initial indications of an intact wellhead were disproven over the course of the day. The unified area command estimated the rate of leaking oil at 1,000 barrels per day. Seeking to reassure the public, Admiral Landry told the press, "We have one-third of the world's dispersant resources on standby," and declared that any spill would be fought as far from the shoreline as possible.[802] The Coast Guard officially suspended its search for the 11 missing rig workers late in the day.[803] The entire focus of the response had shifted and the catastrophe entered a new stage of growing uncertainty.

Phase II: A Seeping Disaster, April 24th-July 15th

Forty miles off the coast of Louisiana, beneath 5,000 feet of seawater, a small fleet of remotely operated vehicles inspected the capsized Deepwater Horizon rig on the sea floor. On April 24th, they confirmed responders' worst fears, discovering at least two

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[801] Ibid. 7.
[802] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 143.
[803] Ibid. 131.

uncontrolled oil and gas leaks from the well pipe.[804] Four days later, the remotely

operated vehicles identified a third leak site near the well source.[805] Oil was being

discharged from three different locations on the seafloor: a drill pipe, a damaged kink in

the riser emerging out of the wellhead, and the end of the riser.[806] By April 25[th], the oil

slick had expanded to become 48 miles long by 39 miles wide, stretching across nearly

2,000 square miles.[807]

Quickly recognizing the newfound "center of gravity" of the crisis as the ongoing

leak at the Macondo well site, the Coast Guard established an incident command post to

coordinate source control efforts with BP in Houston, Texas.[808] BP personnel within the

unified command revised their leak estimate from 1000 barrels per day to 1000-6000

barrels per day. On April 28[th], federal on-scene coordinator Admiral Landry stated that

the estimated leakage rate was 5,000 barrels per day.[809] This estimate remained the

official government estimate for the next four weeks despite persistent indications that

the actual rate was far higher.

BP promptly acknowledged its role as responsible party, assuming liability for the

full costs of the spill response and any damages therein. However, for a number of

reasons, BP was feebly unprepared to mount a vigorous response. First, the oil industry

had failed to develop spill containment technology at the same rate it had developed

drilling technology.[810] As a result, BP resorted to modifying shallow water spill

containment technologies on-the-fly, with disastrous consequences. Second, BP's

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[804] "On Scene Coordinator Report Deepwater Horizon Oil Spill," 203.
[805] Ibid. 204.
[806] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 110.
[807] Ibid. 111.
[808] "On Scene Coordinator Report Deepwater Horizon Oil Spill," 203.
[809] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 133.
[810] This fact is widely-acknowledged in many reports and articles.

response plan was comically inadequate and unprofessional. For example, BP listed Arctic walruses as a vulnerable species in the event of a leak at its Gulf of Mexico drilling sites and listed the web address of a Japanese home-shopping network as a primary equipment provider in the event of an incident.[811] Third, BP's response capacity was insufficient. BP, like most other oil companies, relied on standing contracts with a small network of spill response entities. However, these organizations simply did not have the capacity to deal with a persistent leak on the scale of the Deepwater Horizon incident.

Between April 24[th] and May 1[st], the Coast Guard rapidly expanded the scope of response operations and constructed an elaborate command and control structure. By mid-May, the Coast Guard had developed a response structure that would govern the response through its resolution: a scalable network of unified commands, headed by the national incident commander, coordinated by the unified area command, and composed of large incident command posts in Houma and Mobile, a source-control incident command post in Houston, and smaller incident command posts in Florida and Texas. Each of these incident command posts managed a local network of branches, task forces, and strike teams performing functions ranging from skimming operations, to wildlife rescue, to intergovernmental relations.

On April 26[th], the Department of Energy established a scientific oversight team to collaborate with BP in its efforts to contain and secure the source of the leak.[812] This team was headed by Nobel Prize winning scientist and serving Secretary of Energy Steven Chu and provided technical advice to the national incident commander. The Coast

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[811] Ibid. 133. Tim Dickinson, "The Spill, the Scandal and the President," *Rolling Stone*, June 8, 2010.
[812] "On Scene Coordinator Report Deepwater Horizon Oil Spill," 203.

Guard continued to surge active duty and reserve personnel to the Gulf Coast. Most Coast Guard personnel had BP counterparts. For example, federal on-scene coordinator Admiral Landry worked initially with Doug Suttles, BP's Chief Operating Officer of Exploration and Production. Anticipating growing public interest in the unprecedented disaster, the Coast Guard established a Joint Information Center to manage inquiries.[813]

Other federal departments and agencies became increasingly involved in the response as well. Beginning May 4[th], the Department of Defense approved the mobilization of up to 17,500 National Guard troops to help affected states respond to the oil spill.[814] The Louisiana National Guard activated 1,100 troops and put them under the direction of the unified command.[815] The Environmental Protection Agency, National Oceanic and Atmospheric Administration, and other federal agencies contributed hundreds of additional personnel.[816] By May 10[th], the response team had grown to include at least 13,000 members.[817]

The general public participated in the response to an unprecedented degree as well. Beyond direct participation through the Vessels of Opportunity Program (to be discussed shortly) or volunteer activities along the shoreline, people from all over the world inundated the Coast Guard with ideas and technological proposals to remediate the disaster. The ideas ran the gamut from ingenious to outlandish. One of the more colorful proposals was offered by a Russian newspaper, which recalled Soviet techniques of sealing subsea wellheads and suggested detonating a nuclear weapon deep within the well

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[813] Ibid. 203.
[814] Ibid. 205.
[815] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 133.
[816] Ibid. 133.
[817] "On Scene Coordinator Report Deepwater Horizon Oil Spill," 205.

to halt the flow of oil.[818] In order to manage this tidal wave of input, the Coast Guard

established the Interagency Alternative Technology Assessment Program on June 4th, a

sub-committee of the Interagency Solutions Group, to acknowledge and evaluate ideas

and technologies to address the oil spill. The program processed over 4,000 submissions

and identified one dozen promising initiatives for further evaluation although none was

ultimately deployed en masse.[819] The national incident commander also managed a large

number of international offers of assistance from governments and third parties. The

national incident commander accepted the most useful offers and declined many others

based on operational need.[820]

On April 29th, the Federal Government declared the disaster a "Spill of National

Significance."[821] On May 1st, Secretary Napolitano appointed Admiral Thad Allen as

national incident commander. In addition to his experience salvaging the halting response

to Hurricane Katrina in 2005, Allen oversaw a 2002 simulation that tested the readiness

of the Coast Guard and its partners in the Gulf Coast region to respond to a spill of

national significance off the coast of Louisiana.[822] On April 29th, Louisiana Governor

Bobby Jindal declared a state of emergency and directed the Louisiana Office of

Homeland Security and Emergency Preparedness to undertake any activities necessary to

respond to the spill. These efforts were independent from the unified area command.[823]

On April 30th, the governors of Mississippi, Alabama, and Florida declared states of

emergency as well. On April 30th, Louisiana issued the first of many state fishery and

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[818] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 146.
[819] Ibid. 142.
[820] Ibid. 143.
[821] Ibid. 136.
[822] Ibid. 138.
[823] Ibid. 138.

oyster ground closings. The Federal Government followed suit on May 2[nd], eventually

prohibiting fishing in over one third of the Gulf fishing zone.[824]

In an effort to further integrate state and local officials within the unified

command beginning May 5[th], DHS intergovernmental affairs personnel were deployed to

each incident command post, the Federal Government sent subject matter experts to each

state emergency operations center, and state governments were invited to detail top

officials to the unified area command and incident command posts.[825] In short order,

these efforts proved insufficient to hold the fragile intergovernmental response coalition

together.

Between April 25[th] and May 5[th], BP attempted to manually close valves on

seventeen separate occasions.[826] After repeated failures, this effort was halted on May 5[th]

and abandoned altogether on May 7[th] as BP engineers concluded that the blowout

preventer at the wellhead was entirely inoperable.[827] BP began drilling the primary and

secondary relief wells on May 2[nd] and May 17[th], respectively.[828] Initial estimates

suggested that it would be 90 days before the first relief well would intercept and

neutralize the original wellhead.

In the interim, the national incident commander sought methods of containing the

spill and the political angst of the governors of the affected states and local parish

presidents. First, the national incident commander progressively shifted more and more

authority to liaisons and branch commanders in the field to decentralize decision-making

[824] Ibid. 140.
[825] *Deep Impact: Assessing the Effects of the Deepwater Horizon Oil Spill on States, Localities and the Private Sector*.
[826] "Deepwater Horizon Accident Investigation Report." 29.
[827] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling,"138.
[828] Ibid. 132.

authority and make operations more responsive to the demands of local officials.[829] The

national incident commander adopted a simple catchphrase reflecting its approach to the

disaster: "all oil spill response is local."[830] The national incident commander transitioned

from a structure limited to four centralized incident command posts (in addition to the

source control incident command post in Houston) to a decentralized network of 19

branch offices managed by the incident command posts. The branches were staffed with

anywhere from 35-2,300 persons and engaged local stakeholders in decision-making

regarding near-shore and on-shore response operations.[831]

In addition to traditional spill containment tactics, such as skimming and the

strategic use of boom to protect particularly sensitive shorelines, the national incident

commander employed novel approaches on a massive scale.[832] For example, on April

27th, the Coast Guard conducted the first in-situ controlled burn tests and deployed the

first lines of specialized fire boom at pre-designated sites in Louisiana and Florida.[833]

Although in-situ burns had only been attempted once before in open U.S. waters, the

national incident commander authorized 411 in-situ burns over the course of the

response, removing an estimated 265,450 barrels of oil from the Gulf of Mexico.[834]

Figure 23: Controlled burns were conducted on an unprecedented scale[835]

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[829] "Deepwater Horizon Containment and Response: Harnessing Capabilities and Lessons Learned," 6.
[830] Ibid. 32.
[831] Ibid. 48.
[832] In fact, only 3-4% of the released oil was recovered via mechanical means, such as skimmers. Papp, "Final Action Memorandum - Incident Specific Preparedness Review (ISPR) Deepwater Horizon Oil Spill," 8.
[833] "On Scene Coordinator Report Deepwater Horizon Oil Spill," 204.
[834] "Deepwater Horizon Containment and Response: Harnessing Capabilities and Lessons Learned," 52; "On Scene Coordinator Report Deepwater Horizon Oil Spill," 217.
[835] "Deepwater Horizon Containment and Response: Harnessing Capabilities and Lessons Learned," 53.

The national incident commander also deployed dispersants in unprecedented quantities and via non-traditional delivery methods. Although dispersants had been used many times in the past to accelerate the dissolution of oil in seawater to mitigate its effects on wildlife and seashores, the national incident commander employed a layered defense of surface and aerial dispersant platforms and pioneered the sub-sea application of dispersants at the source of the leak. This aggressive use of dispersants both diminished visible oil slicks and contributed to increasing concern about the long-term effects of dispersants on the environment.

Lastly, the national incident commander established the Vessels of Opportunity Program . The Vessels of Opportunity Program was the result of the combined efforts of BP and the national incident commander to mobilize a larger response fleet and respond to the pleas of state and local officials demanding a response role for the many fishermen rendered jobless by the disaster. The program was not envisioned in any of the region's

plans or doctrine, but was modeled on similar programs in other states, such as Alaska.[836]

On May 3rd, Vessels of Opportunity training began for more than 2,000 volunteers.[837]

Operationally, the effectiveness of the program was mixed. Fleets were organized into task forces with specific accountabilities and were often directed by air units to oil slicks.[838] The success of particular units was dependent upon strong tactical oversight, effective communications, and close coordination with spotters.[839] Unfortunately, real-time communication among personnel in the field, the branches, and spotter aircraft was inconsistent and a source of significant frustration.

Politically, the Vessels of Opportunity Program proved very popular. As a result of the enthusiasm of participants and politicians, this program quickly spun out of control as state and local officials, frustrated with delays and restrictions, started their own programs, sending the bills to BP and operating outside of the direction of the unified command. The freewheeling efforts of state and local officials to respond to the environmental and economic effects of the Deepwater Horizon incident effectively created a "floating militia" of independent vessels that were inefficiently deployed, insufficiently trained, and often placing themselves and others at unnecessary risk.[840]

Figure 24: Private vessel owners participated in the response through the Vessels of Opportunity Program[841]

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[836] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 121.
[837] "On Scene Coordinator Report Deepwater Horizon Oil Spill," 205.
[838] "Deepwater Horizon Containment and Response: Harnessing Capabilities and Lessons Learned," 39.
[839] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 121.
[840] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 141.
[841] "On Scene Coordinator Report Deepwater Horizon Oil Spill," 118.

As the first week of the crisis drew to a close, the environmental impacts of the leaks at the seafloor were bubbling to the surface and rapidly seeping ashore. On April 30th, the *Times-Picayune* reported the rescue of the first oiled bird.[842] On May 6th, oil reached the shores of Chandeleur Islands, Louisiana.[843] Two days later, tar balls were reported on Dauphin Island, Alabama. Shore-based clean-up operations began.

As the crisis wore on, state political officials clawed back authority from their representatives at the unified area command, rescinding the ability of state officials at the unified area command to approve daily decisions.[844] Local officials became increasingly assertive as well. The provisioning of boom, a visible if not always effective element of the response, became a focal point of politicians' frustrations with the response. Despite the mobilization of an unprecedented 14 million feet of boom, there was never enough to
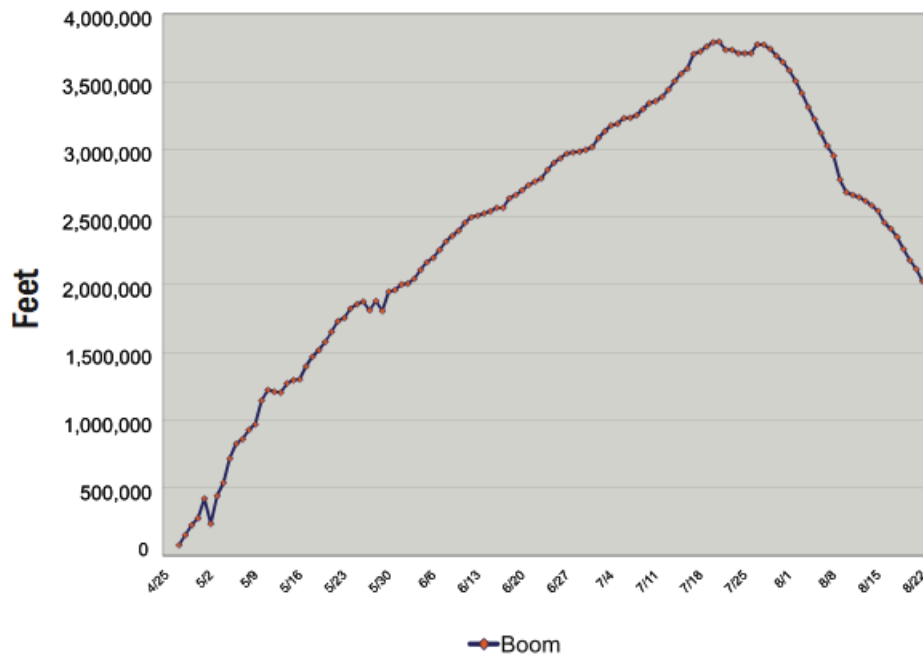
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[842] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 141.
[843] "On Scene Coordinator Report Deepwater Horizon Oil Spill," 205.
[844] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 138.

meet the perceived needs of local officials.[845] One parish president threatened to shoot

out the tires of trucks carrying boom out of his parish and other parish presidents

threatened Coast Guard responders with arrest if they were caught redeploying boom

located in their jurisdiction.[846] Gradually, the national incident commander learned to

deploy boom for political reasons as well as operational reasons in order to preserve what

was effectively a coalition-based intergovernmental response.[847]

Figure 25: Containment Boom Deployed[848]

In early May, with increasingly assertive oversight from the national incident

commander, the first in a series of containment initiatives at the source of the leak was

initiated by BP. At the direction of the unified command, BP lowered a containment

dome to the sea floor on May 6[th]. Unfortunately, the containment dome was quickly

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[845] "Deepwater Horizon Containment and Response: Harnessing Capabilities and Lessons Learned," 4.
[846] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 154.
[847] Ibid. 153.
[848] "Deepwater Horizon Containment and Response: Harnessing Capabilities and Lessons Learned," 5.

clogged with ice as a result of methane gas escaping from the well coming into contact with cold seawater. Not only did the dome not capture oil, it actually threatened the safety of ships on the surface as it rapidly filled with flammable gas, became buoyant, and began to accelerate towards the surface. Fortunately, BP engineers were able to reestablish control before it was too late.[849]

On May 16[th], responders successfully deployed a riser insertion tube tool, which captured a portion of the oil and gas escaping from the wellhead.[850] Over nine days of use, the riser insertion tube tool collected approximately 22,000 barrels of oil.[851] At this point, the response force had grown to 19,163 persons and 656 vessels.[852] Response aircraft were flying nearly 100 sorties per day, directing responders in real-time from the air.[853]

On May 26[th], the unified command commenced the "top kill" and "junk shot" procedures in another attempt to stem the flow from the well by injecting heavy drilling fluids into the wellhead. The object of the complementary procedures was to overcome the flow of escaping oil and gas by pumping heavy drilling mud into the wellhead and then forcing materials such as tire rubber and golf balls into the blowout preventer. After three days of forcing drilling mud into the well at rates exceeding 100,000 barrels per day and firing multiple "junk shots" into the blowout preventer, the procedures were reluctantly declared a failure.[854]

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[849] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 146.
[850] "On Scene Coordinator Report Deepwater Horizon Oil Spill," 206.
[851] "Stopping the Spill: The Five-Month Effort to Kill the Macondo Well," 13.
[852] "On Scene Coordinator Report Deepwater Horizon Oil Spill," 206.
[853] "Deepwater Horizon Containment and Response: Harnessing Capabilities and Lessons Learned," 46.
[854] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 150.

On June 1st, BP attempted to lower the "top hat," a modified version of the containment dome, over the wellhead.[855] By June 3rd, the "top hat" was successfully siphoning nearly 15,000 barrels per day of the oily liquid from the wellhead to containment ships at the surface.[856] A second siphoning system came online on June 16th and pumped an additional 10,000 barrels per day to a specially equipped ship that processed and burned recovered oil.[857]

As responders continued to struggle with source containment operations, concern over the long-term effects of the massive use of dispersants led to a policy reversal. On May 26th, the federal on-scene coordinator and Environmental Protection Agency ordered BP to substantially reduce its use of dispersants.[858]

As the leak continued to menace the shores of five states and the livelihoods of many millions of Gulf Coast residents, the political profile of the crisis grew further. On May 27th, the Interagency Solutions Group's Flow Rate Technical Group issued a flow rate estimate of 12,000-19,000 barrels per day and the national incident commander approved the construction of a section of Louisiana's Barrier Island berm project proposal.[859] Only days later, the national incident commander would bend to political pressure from the Governor of Louisiana and approve the construction of an additional five berms. Like the strategic deployment of boom as a political palliative, this decision was a political offering to the State of Louisiana engineered by the White House and

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[855] Ibid. 159.
[856] "On Scene Coordinator Report Deepwater Horizon Oil Spill," 2.
[857] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 159.
[858] "On Scene Coordinator Report Deepwater Horizon Oil Spill," 207.
[859] Ibid. 207.

national incident commander in order to preserve the cooperation of the state in the national response effort.[860]

On May 28[th], President Obama and Secretary of Homeland Security Napolitano traveled to the Gulf Coast and the president ordered the national incident commander to triple responder manpower in order to intensify the response effort.[861] Also, beginning June 1[st], the national incident commander ceased its standing practice of including BP officials in daily press briefings in order to dispel confusion regarding who was really in charge.[862] Days later, Coast Guard Rear Admiral James A. Watson assumed the role of federal on-scene coordinator and the hurricane season began, bringing with it the threat of severe storms and disruption.[863] To make matters worse, tar balls were discovered along the shoreline as far east as Florida beginning on June 4[th].[864]

The national incident commander and new federal on-scene coordinator carried out the president's order to triple the response force by shifting the unified area command from Robert, Louisiana, to New Orleans, Louisiana, in order to acquire additional space and move closer to the most affected parishes.[865] They also established a number of other initiatives to better manage the response force. For example, on June 24[th], airspace control was transferred from Incident Command Post Houma to Tyndall Air Force Base

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[860] The berms project is widely regarded as an opportunistic maneuver by the Louisiana State Government to foot BP with a $360 million bill for a coastal restoration project under the pretense of a spill mitigation measure. Among other shortcomings, the berms could not be completed in time to fight the spill. Hagerty and Ramseur, "Deepwater Horizon Oil Spill: Selected Issues for Congress." 20-21;"Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 154.
[861] "On Scene Coordinator Report Deepwater Horizon Oil Spill," 208.
[862] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 151.
[863] "On Scene Coordinator Report Deepwater Horizon Oil Spill," 208.
[864] Ibid. 209.
[865] Ibid. 210.

in order to provide centralized airspace management across the entire response zone.[866]

Tyndall managed airspace in the region until deactivation on August 23rd, successfully

prioritizing air operations and maintaining a perfect safety record throughout. On June

30th, the size of the Deepwater Horizon response fleet peaked at 6,050 vessels.[867] The

number of deployed personnel peaked just over a week later at 47,849 persons.

On July 9th, the Coast Guard established the last of its network of incident

command posts in Galveston, Texas, in anticipation of the possibility of oil making

landfall on Texan shores.[868] Fortunately, very little oil ever managed to reach the shores

of Texas or Florida, rendering operations in these areas less intensive than those along the

Louisiana shoreline. On July 12th, Rear Admiral Paul Zukunft became the new federal

on-scene coordinator.[869]

The Sealing of the Wellhead: July 15th-October 1st

The best possibility of sealing the well in advance of the completion of the relief

wells sometime in September entailed significant risk. In order to seal the well, the

damaged blowout preventer would have to be removed and replaced with a device called

a "capping stack." The capping stack would be placed atop the blowout preventer and its

valves would then be closed to stem the flow of oil. However, technical advisors were

concerned that the integrity of the walls of the drilling hole beneath the blowout preventer

were so compromised by the force of the initial blowout that the walls themselves could

give way, resulting in massive seepage of oil and gas up through the seafloor in such a

manner that it would be nearly impossible to control. After extensive consultations with

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[866] Ibid. 210.
[867] Ibid. 210.
[868] Ibid. 211.
[869] Ibid. 211.

Energy Secretary Steven Chu's scientific oversight team in Houston, Texas, and experts from industry, on July 9[th] the national incident commander established a rigorous monitoring regime and authorized BP to install a capping stack atop the wellhead but not close it pending further study of the integrity of the well.[870] On July 15[th], the national incident commander authorized BP to close the capping stack. If pressure levels rose past pre-determined points, the valves on the capping stack would be re-opened immediately. This decision took on monumental proportions as a single flawed assumption or minor miscalculation could have rendered these measures meaningless and the wellhead permanently uncontrollable.

On July 15[th], the RP successfully closed the capping stack and stopped the flow of oil at 2:22pm. This immensely complex operation represented the maturation of a simultaneous operations capability developed by the national incident commander and BP. Planners engaged in extensive storyboarding to choreograph complex collaborative operations and managed subsea operations from the "Highly Immersive Visualization Environment" command center in Houston.[871] This facility co-located many controllers and connected others via an open communications system, providing them all a common operating picture. At one point in the response, 16 remotely operated vehicles were operating on-site and being directed from eight separate vessels.[872] The national incident commander also used Automatic Identification Software to track the precise location and identity of vessels in real-time.[873] This system was essential to the national incident commander's situational awareness and enabled responders to manage the positioning of

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[870] "Stopping the Spill: The Five-Month Effort to Kill the Macondo Well," 28.
[871] "Deepwater Horizon Containment and Response: Harnessing Capabilities and Lessons Learned," 15.
[872] Ibid. 14.
[873] Ibid. 18.

40-50 vessels within a one-mile radius of the wellhead and thousands more between the disaster site and shore. To everyone's relief, days of intensive monitoring and testing suggested that the capping stack did not compromise the integrity of the well.[874] For the first time in 87 days, the flow of oil from the Macondo wellhead had been suspended. Beginning on August 2[nd], BP began a nearly week-long effort to reinforce the plugged wellhead with a more durable solution using concrete in a technique referred to as a "static kill."

Figure 26: The Highly Immersive Visualization Environment command center[875]

As the national incident commander continued to monitor the integrity of the wellhead and BP pressed ahead with the relief wells, responders continued to attempt to contain the oil that had already escaped. Unfortunately, these efforts were interrupted by Tropical Storm Bonnie, which swept through the region and forced responders to

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[874] "On Scene Coordinator Report Deepwater Horizon Oil Spill," 212.
[875] "Deepwater Horizon Containment and Response: Harnessing Capabilities and Lessons Learned," 15.

discontinue operations from July 22-24[th], and forced the removal of many miles of boom. Containment efforts resumed anew on June 24[th] and continued uninterrupted throughout the remainder of the summer.

For the duration of the response, the national incident commander was engaged in a delicate struggle with state and local officials over the deployment of critical resources, especially the provisioning of boom. The national incident commander employed many tactics, including daily conference calls, the dispatch of senior Coast Guard officers as liaisons to elected officials, and more traditional forms of public outreach. As the national incident commander prepared to scale down the manpower of the response, officials were determined to directly engage elected officials in the planning process. On July 27[th], the national incident commander held the first in a series of on-going parish president's meetings and began the process of developing parish-specific transition plans to scale down the response in coming weeks.[876] Already, offshore containment operations were drawing to a close as salvageable oil became increasingly scarce. On September 15[th], the Vessels of Opportunity Program was discontinued in all affected states except Louisiana.

Figure 27: A Timeline of Initiatives to control the wellhead[877]

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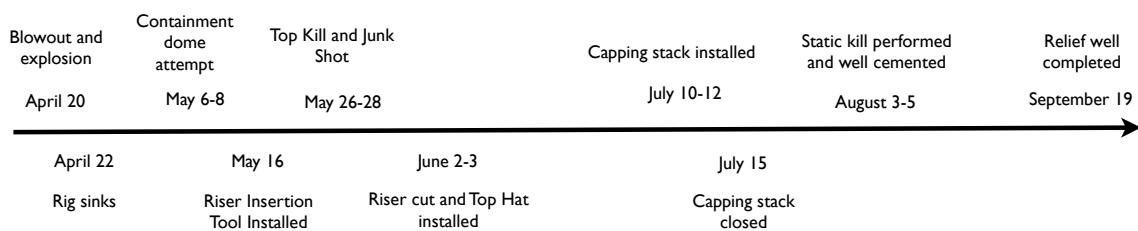
[876] "On Scene Coordinator Report Deepwater Horizon Oil Spill," 213.
[877] Timeline developed by author based on a timeline included in: "Stopping the Spill: The Five-Month Effort to Kill the Macondo Well."

On September 16th, the first relief well intercepted the Macondo well. By September 19th, 152 days after the blowout, the well was permanently sealed from below.[878] The demobilization process unfolded gradually. By September 20th, the large incident command posts at Houma and Mobile demobilized and transitioned operations to an entity charged with addressing remaining response and recovery efforts from New Orleans, the Gulf Coast Incident Management Team.[879] On October 1st, the national incident commander demobilized.

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[878] "On Scene Coordinator Report Deepwater Horizon Oil Spill," 217.
[879] Ibid. 217.

Chapter 6: Explaining Collaborative Performance in the Afermath of the Deepwater Horizon Incident

This chapter analyzes the content of the Deepwater Horizon incident case study to determine the extent to which the summary variables identified in the theory chapter affect collaborative capacity. This discussion features a structured analysis of the summary and situational variables identified in the framework. The final chapter draws on this analysis to conduct within-case and cross-case comparisons. This chapter begins with an analysis of inter-organizational factors before examining intergovernmental considerations.

Inter-organizational collaboration

Inter-organizational power dynamics

Authorities

Coast Guard authorities did not change meaningfully between the Hurricane Katrina catastrophe in 2005 and the Deepwater Horizon catastrophe in 2010. The Coast Guard bridges the national security, law enforcement, and regulatory domains.[880] Today, the Coast Guard is responsible for 11 types of missions in both the homeland security and non-homeland security domains:

Table 7: Coast Guard Homeland Security and Non-homeland Security Missions[881]

Homeland Security Missions	Non-homeland Security Missions

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[880] Flynn, "Homeland Security Is a Coast Guard Mission."
[881] "Annual Review of the United States Coast Guard's Mission Performance."

1. Ports, waterways, and coastal security	1. Marine safety
2. Drug interdiction	2. Search and rescue
3. Migrant interdiction	3. Aids-to-navigation
4. Defense readiness	4. Living marine resources
5. Other law enforcement	5. Marine environmental protection
	6. Ice operations

The evidence available suggests that the Coast Guard's statutory authorities to prepare for and respond collaboratively to the Deepwater Horizon incident were sufficient. Existing reports have recommended a limited number of policy adjustments but none have called for a legislative overhaul like that experienced in the wake of other national catastrophes, such as those launched after the September 11, 2001, terrorist attacks or Hurricane Katrina.
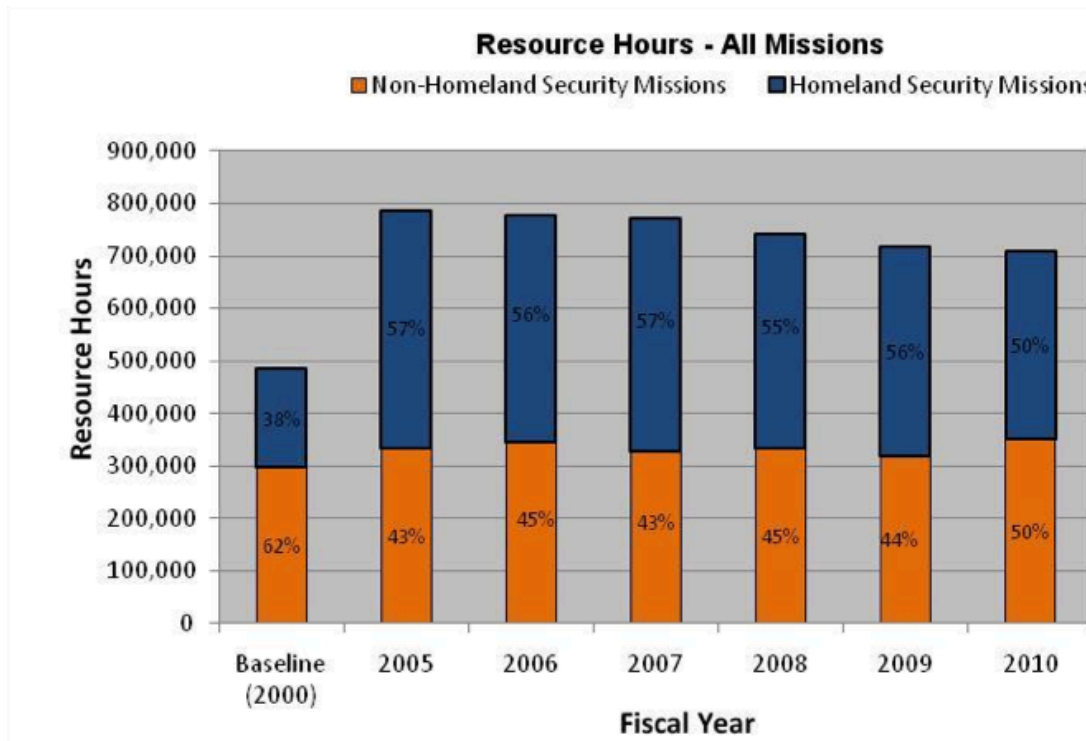
Resources

The Coast Guard's marine environmental protection preparedness and response programs were diminished in the decade preceding the Deepwater Horizon incident. First, resources and leadership attention were diverted to homeland security tasks as a result of the increasing profile of the homeland security mission portfolio and the shrinking incidence of oil spills in the following the passage of the Oil Pollution Act reforms in 1990.[882] Total resource hours—flight hours and vessel "under way" hours— available for all missions has been declining since 2005 due to aging cutters and aircraft

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[882] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 5.

and a shortage of funding for capital investments.[883] Over the last decade, the distribution

of reported resource hours has skewed in favor of homeland security missions. In 2010,

parity among homeland security and non-homeland security mission resource hours was

achieved primarily as a result of several major events including the Deepwater Horizon

catastrophe.

Figure 28: Historical distribution between Coast Guard homeland security and non-homeland security missions.[884]

Even among individual mission sets, marine environmental protection remains a

low priority. The marine environmental protection mission area represented just 4% of

Coast Guard resource hours in 2010.[885] In contrast, the ports, waterways, and coastal

security mission area was responsible for over 22% of total resource hours.

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[883] "Annual Review of the United States Coast Guard's Mission Performance," 1.
[884] Ibid. 4.
[885] Ibid. 21.

These trends are reflected in budget data as well. The funding dedicated to Coast Guard marine environmental protection "atrophied" in the years since the Exxon Valdez spill of 1989.[886] Measured by funding allocations, the marine environmental protection mission is ranked ninth in the Coast Guard mission portfolio.[887]

Lastly, organizational considerations may have affected the Coast Guard's marine environmental capabilities. For example, the Coast Guard's sector organization shifted marine environmental response responsibilities into a response community more experienced with law enforcement and search and rescue activities.[888]

A shortage of resource hours, funding, and organizational considerations negatively affected the marine environmental protection mission and had tangible consequences in the Deepwater Horizon response. For example, a lack of funding for the development and implementation of area contingency plans directly contributed to the meager participation of state and local officials.[889] The success of the Oil Pollution Act in preventing another catastrophic oil spill and the rising budgetary profile of the national security portfolio in the Coast Guard budget contributed to this dynamic.

Staffing

In general, the Coast Guard educated, trained, and equipped its personnel appropriately for the challenges presented by the Deepwater Horizon response. Coast Guard personnel had the knowledge, skills, and familiarity with the National Incident Management System, relevant plans, and doctrine necessary to execute a collaborative response. Moreover, the strategic leadership provided by National Incident Commander,

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[886] *Assuring the Safety of Domestic Energy Production: Lessons Learned from the Deepwater Horizon Oil Spill*; "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review."
[887] "USCG Missions."
[888] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 5.
[889] Ibid. 16.

Admiral Thad Allen, was widely respected and proved critical as the political dimensions of the crisis grew more pronounced.

However, other leaders within the Coast Guard did not perform as well. According to an independent Coast Guard report, "some [leaders] should not have occupied crisis leadership positions" in the first place as they lacked essential characteristics, skills, and experience.[890] The performance of crisis leaders among the organizations involved in the response was "uneven at best."[891] Currently, the Coast Guard does not train a cadre of specialists in domestic incident management, relying instead on senior leaders in regional billets to serve as federal on-scene coordinators.[892]

The Coast Guard also lacked personnel with specific skill sets and qualifications. In the initial days of the Deepwater Horizon incident, the Coast Guard opened the unified area command and Houma incident command post and was able to staff them with personnel appropriately trained in the National Incident Management System and the particularities of oil spill response. Highly trained specialists in oil spill response from the Coast Guard's National Strike Force, a contingent of 200 deployable personnel, were quickly exhausted by the scope and duration of the incident. However, as the operation expanded to the Mobile incident command post and a network of branches (initially referred to as forward operating bases), BP, the Coast Guard, and the affected states lacked trained and experienced personnel to fill key roles. Throughout the crisis, the response suffered from a shortage of section chiefs, branch directors, division

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[890] Ibid. 59.
[891] Ibid. 9.
[892] Other agencies, including FEMA, provide specialized training to a pre-designated cadre of crisis management professionals.

supervisors, task force leads, and public affairs officers.[893] At one point, a junior officer

was serving as the chief of the operations section at one incident command post,

responsible for managing 1,000 personnel.[894] Of particular note, the Deepwater Horizon

crisis revealed that experienced contingency planners are rare in the Coast Guard. An

independent Coast Guard review determined that contingency planning had been de-

emphasized in recent years and that "a planning assignment is not considered an

important career step for a Coast Guard officer."[895]

In order to compensate for the lack of qualified personnel, response leaders often

required two or three personnel to perform a function that could otherwise be performed

by one properly trained individual. This phenomenon, the president's May 28[th] order to

triple the footprint of the response, and the absence of any effort to periodically review

and "right-size" the response organization through late July, resulted in a bloated and

sometimes inefficient response organization.

Surge Capacity

Efforts to surge equipment and key personnel to the Gulf Coast were hindered by

a number of factors. The Emergency Management Assistance Compact, an interstate

resource brokering mechanism that distinguished itself in the Hurricane Katrina response,

struggled to perform its functions during the Deepwater Horizon response. Since the

Deepwater Horizon response did not trigger a Stafford Act declaration, the Federal

Government could not guarantee reimbursement of operational costs to contributing

states, thus requiring the completion of time-consuming paperwork.[896] Crucially, the

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[893] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 65, 101.
[894] Ibid. 106.
[895] Ibid. 18.
[896] Ibid. 106.

Coast Guard had a limited ability to identify qualified personnel beyond its own ranks. The Coast Guard used its Mobilization Readiness Tracking Tool to identify and deploy qualified personnel. However, this system does not include state or local personnel. This shortcoming was particularly troublesome during the Deepwater Horizon response because personnel from industry and non-governmental oil spill response organizations often had no equivalents among the ranks of Coast Guard personnel. [897]

The Coast Guard's organizational structure and standardization policies facilitated a flexible and rapidly scalable response to the Deepwater Horizon catastrophe. As discussed in previous chapters, the Coast Guard is organized into areas, districts, and sectors. The initial response to the fire aboard the Deepwater Horizon mobile offshore drilling unit was managed by the New Orleans Sector leadership. As the scope of the disaster expanded, command was transferred to Admiral Mary Landry at the district level and eventually complemented with the establishment of the National Incident Command. By rapidly escalating the command authority of the incident manager, the Coast Guard organizational structure ensured that commanders were able to draw on regional and national resources.

Second, standardization of Coast Guard training, assets, exercises, and modular unit structures made it relatively easy for commanders to assemble a response team with the desired capabilities. As in the Hurricane Katrina response, Coast Guard organizational structure and policies enabled a dynamic network response to an unfolding catastrophe.

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[897] Allen, "National Incident Commander's Report: Mc252 Deepwater Horizon," 18.

Collaborative culture

The Coast Guard's organizational culture facilitated collaboration throughout the Deepwater Horizon catastrophe. In the pre-incident planning and early stages of the response, Coast Guard responders uniformly reported that long-held Coast Guard policy was to assume a worst-case discharge.[898] This predisposition to prepare for the worst resulted in a reasonably forward-leaning deployment and surge of personnel and assets before the full scope of the catastrophe was apparent.[899]

The Deepwater Horizon incident also demonstrated that Coast Guard principles continue to drive decision-making and operations in tangible ways. Coast Guard personnel established and maintained a "management-by-objectives command environment" punctuated by daily incident action plans. Similarly, Coast Guard personnel regularly exercised initiative in the pursuit of identified objectives and acted independently when the situation on the ground demanded it.[900] During the course of response operations, the incident command posts pushed progressively more decision-making authority to the branches in order to promote initiative and responsiveness. Lastly, Coast Guard personnel demonstrated remarkable flexibility in very trying circumstances. Responders readily undertook boom laying operations and other activities with negligible operational effect for strategic political reasons that they may not have recognized or agreed with. Similarly, junior Coast Guard officers often found themselves

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[898] "Decision-Making within the Unified Command," 6.
[899] Although some critics argue that the Spill of National Significance designation was unduly delayed, it is unclear that an earlier declaration would have accelerated the Coast Guard response beyond the establishment of the National Incident Command.
[900] Coast Guard personnel in isolated Branches sometimes elected to respond to local needs when concurrence from the incident command post was not readily available.

representing the response effort in contentious town hall meetings or in one-on-one meetings with incensed parish presidents.

Organizational learning and adaptation

Organizational learning is described as, "an experience-based process through which knowledge about action-outcome relationships develops, is encoded in routines, is embedded in organizational memory, and changes collective behavior."[901] This process usually takes place over extended time periods. Organizational adaptation generally refers to an organization's ability to manage a rapid learning cycle when dealing with novel problems.

Although the Coast Guard maintains a number of formal organizational learning programs, such as the "CG SAILS" database of lessons learned and institutional reviews such as the Incident Specific Preparedness Review conducted after major oil spills, there is evidence that Coast Guard organizational learning in the domain of marine environmental protection has not been institutionalized. Admiral Thad Allen, former commandant of the Coast Guard and the National Incident Commander during the Deepwater Horizon response, underscores the importance of institutionalization of lessons learned, observing, "If there's a traumatic event and you learn from it, you don't add a crime to a crime."[902] Despite this, the Coast Guard repeated many past mistakes, previously documented in after action reports from real-world incidents and exercises. Lessons learned from previous events and exercises were not institutionalized in Coast Guard preparedness and response doctrine or formally reviewed by responders as the

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[901] Lipshitz, Popper, and Friedman, "A Multifacet Model of Organizational Learning." Note: Lipshitz cites an unpublished paper by Barnett in his bibliography.
[902] Allen, "Unprecedented Events, Unprecedented Leadership Challenges."

Deepwater Horizon incident unfolded.[903] As a result, responders were forced to re-learn these same lessons, with all of the attendant costs and delay.

The Deepwater Horizon Incident Specific Preparedness review documents a collection of real-world lessons learned but never institutionalized. Recommendations from oil spills in the San Francisco Bay area in 1996 and 2007, advocating that local government personnel should participate in spill response exercises and senior Coast Guard officials should receive public affairs training, among other things, were not implemented.[904] Other incidents, such as the Hurricane Katrina response, imparted equally important lessons, such as the importance of developing a personnel system that could sort personnel according to specific skills and experience. Operational successes from previous incidents were similarly neglected. For example, one of the key innovations of the Hurricane Katrina response and recovery effort was the deployment of Coast Guard officers to liaise with local officials. Unfortunately, this practice was not memorialized and was instead "re-discovered" late in the Deepwater Horizon response.

In the aftermath of the Deepwater Horizon response, the Coast Guard is institutionalizing at least some of the lessons it has learned and "re-learned." To date, the Coast Guard has instituted a number of reforms. For example, the Coast Guard has already institutionalized a senior-level Coast Guard liaison program to rapidly and sustainably integrate state, local, and tribal officials into future response operations.[905] Similarly, the Coast Guard requested additional personnel in the President's Budget for fiscal year 2012 to develop a deployable incident management surge capability.

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[903] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 126.
[904] Ibid. 10.
[905] *Assuring the Safety of Domestic Energy Production: Lessons Learned from the Deepwater Horizon Oil Spill*, 7.

The Coast Guard attempted to learn from the National Response System spill of national significance exercise series. This program included spill of national significance exercises in 1997, 1998, 2002, 2004, 2007, and March 2010.[906] There is mixed evidence to suggest that lessons learned from the spill of national significance exercise series were properly institutionalized. Although a review of the after action reports makes it clear that many prescient recommendations were not acted upon, it is clear that others were.[907] According to one report, the Coast Guard lacks a consistently established process for incorporating external lessons learned from training, exercises, and incidents into oil spill response plans.[908] The Coast Guard's Contingency Preparedness System, a specialized lessons learned system for oil spill response, is rarely shared with other agencies and partners, including the all-important Area Committees. Moreover, key officials who participated in the exercises learned invaluable lessons at the individual level that they applied during the Deepwater Horizon response. Admiral Thad Allen, the National Incident Commander for the Deepwater Horizon response, served as the National Incident Commander in the 2002 spill of national significance exercise, which presciently simulated an uncontrolled release off the coast of New Orleans.[909] Juliette Kayyem, the Assistant Secretary for Intergovernmental Affairs during the Deepwater Horizon response, was the senior-most participant in the 2010 spill of national significance

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[906] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 128.

[907] Of note, Appendix 2 of the spill of national significance 2007 report details the progression or organizational learning in specific issue areas in some detail "Spill of National Significance 2007 Exercise (Sons 07): After Action Report," (2008); Doane, "2002 Spill of National Significance after Action Report." "California Sons 04: After Action Report."

[908] Epperson, "A perspective from within Deepwater Horizon's Unified Command Post Houma ".

[909] Doane, "2002 Spill of National Significance after Action Report."

exercise in Boston, Massachusetts. She later acknowledged the value of her personal participation in the exercise.

The Coast Guard's ability to adapt to novel situations in real-time constitutes a slightly different capacity. Adaptive organizations must be able to rapidly collect and analyze information, recognize aberrations that require atypical response, and develop and test innovative solutions. The Coast Guard's focus on planning, training, and exercises prepared Coast Guard personnel to engage in "double-loop learning" cycles.[910] Coast Guard personnel were equipped with the knowledge, skills, abilities, and autonomy to adjust operational goals and methods in the field. This flexibility enabled the Coast Guard to engage in rapid learning, which contributed to the adaptiveness of the oil spill response.

The creation of the Interagency Solutions Group is a prominent example of Coast Guard adaptation during the Deepwater Horizon response. When the crisis began, the federal on-scene coordinator activated the National Response Team and Regional Response Team. However, in the words of one senior official, both of these teams quickly became "report-to" bodies rather than "decision-making" bodies.[911] The intimate participation of senior officials elevated decision-making further from the scene of the incident. In order to compensate for this dynamic Admiral Thad Allen, upon his appointment as National Incident Commander, established the Interagency Solutions Group to perform the functions of the re-purposed National Response Team. The Interagency Solutions Group was directed to "support the mobilization and deployment of resources and trained personnel, maintain situational awareness at senior levels,

[910] "Coast Guard: Observations on the Preparation, Response, and Recovery Missions Related to Hurricane Katrina", 9.
[911] "Decision-Making within the Unified Command," 9.

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identify and address interagency policy issues, develop a strategic perspective, and assist the National Incident Command on emergent matters."[912] The Interagency Solutions Group grew to include seven sub-groups: countermeasures and alternative technology, community and state engagement, flow rate and subsea analysis, economic solutions team, ecosystem, archaelogical/cultural impact, integrated services, and public health and safety. More broadly, The Deepwater Horizon response demonstrated the ability of the Government and private sector to "rapidly assess and adapt to new or unusual contingencies and develop innovative solutions for problems not previously experienced."[913]

Unified command

Operational Coordination

In the context of Deepwater Horizon response operations, a meaningful unified command would have at least three key attributes. First, it would include the main organizational actors in response operations from all levels of government and non-governmental organizations. Second, it would co-locate senior officials from each organization with the authority to make major operational decisions and implement them. Third, it would integrate air, surface, and sub-surface operations. Associated outcomes include evidence of meaningful joint decision-making processes and coordinated and/or collaborative oil recovery operations. By this standard, the Coast Guard did establish and sustain an effective unified command throughout the majority of the response. Personnel from many of the responding organizations worked together effectively. In the judgment

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[912] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 88.
[913] Ibid. 4.

of an independent Coast Guard after action evaluation team, the National Incident

Command successfully achieved "unity of effort."[914]

For the majority of the response, the Coast Guard successfully included inter-

organizational and intergovernmental decision-makers in joint strategic and operational

decision-making. Federal agencies and departments and the responsible party were

consistently active within the unified command throughout the response. State and

especially local officials participated in the unified command to varying degrees over the

course of the crisis. State officials were initially well integrated until decision-making

authority was rescinded from designated state on-scene coordinators, the ultimate oil spill

response professionals, to senior state elected officials, such as governors.[915] However,

the National Incident Commander steadily re-integrated state decision-makers into the

unified command by directing responders to address political imperatives on a strategic

basis.

The "home rule economy" of Louisiana presents unique challenges to disaster

response. The State of Louisiana explicitly delegates emergency powers to local

authorities, principally parish presidents and mayors, during declared disasters.[916] As the

crisis wore on, the unified command undertook a number of initiatives to incorporate

local officials into the response more effectively. Branch offices (branches) established at

the local level and broadly empowered to make decisions in the field were a crucial

innovation.[917] A branch was positioned in each of Louisiana's coastal parishes and in the

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[914] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 4.
[915] Ibid. 76.
[916] Committee on Homeland Security, *DHS Planning and Response: Preliminary Lessons from Deepwater Horizon*, Second, September 22, 2010, 11.
[917] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 93.

coastal counties in Alabama, Mississippi, and Florida.[918] These branches, in conjunction

with the Parish President Liaison Program, which assigned senior Coast Guard officers to

liaise with local officials, effectively integrated state and local officials into a response

that was initially derided as lumbering and unresponsive. As the crisis continued, the

branches were delegated additional decision-making authorities, compressing what was

previously a 24-48 hour decision-cycle, which undercut responsiveness and fueled

frustrations.[919]

Second, the unified command concept also successfully co-located decision-

makers in the National Incident Command, unified area command, incident command

posts, and Branches across the Gulf Coast. Furthermore, increasingly robust

communications capabilities enabled officials at the National Incident Command, unified

area command, incident command posts, and, to a lesser extent (due to their geographic

isolation), the branches to coordinate and collaborate.

Third, the elaborate structure of the National Response System successfully

integrated air, surface, and sub-surface operations. The Deepwater Horizon represented

the first designation of a spill of national significance and the inaugural application of the

National Incident Command concept. The establishment of the National Incident

Command streamlined the chain of command between the federal on-scene coordinator

and senior decision-makers by replacing district, sector, and commandant oversight with

the National Incident Command. The National Incident Command immediately improved

information flow within and beyond the response organization.[920] Although originally

designed to be a lean organization or "thin client," the National Incident Command

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[918] Ibid. 94.
[919] Ibid. 94.
[920] Ibid. 80.

rapidly expanded to include 138 individuals. Approximately half of the responders were active duty and reserve Coast Guard personnel and the remainder were from federal departments and agencies.[921] The National Incident Command coordinated air operations from the Air Coordination Center at Tyndall air force base, managing 127 aircraft without incident over the course of the crisis.[922] Surface operations were coordinated through an integrated network of four incident command posts, 17 Branches, and 32 staging areas.[923] Although the Vessels of Opportunity Program fleet presented challenges to surface coordination, the 3,200 vessels of opportunity were generally deemed to have been moderately effective and avoided any serious safety accidents.[924] Sub-surface operations were coordinated through Incident Command Post Houston and overseen by Energy Secretary Steven Chu's technical advisory team and directed by the National Incident Command. Sophisticated simultaneous operations on the surface above the wellhead were deftly coordinated with the underwater operation of a fleet of remotely operated vehicles.

Figure 29: A Crowded Disaster Site[925]

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[921] Ibid. 81-82.

[922] Allen, "National Incident Commander's Report: Mc252 Deepwater Horizon," 19; "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 156.

[923] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 156.

[924] Ibid.

[925] "Deepwater Horizon Containment and Response: Harnessing Capabilities and Lessons Learned," 17.

SIMULTANEOUS OPERATIONS OVERVIEW
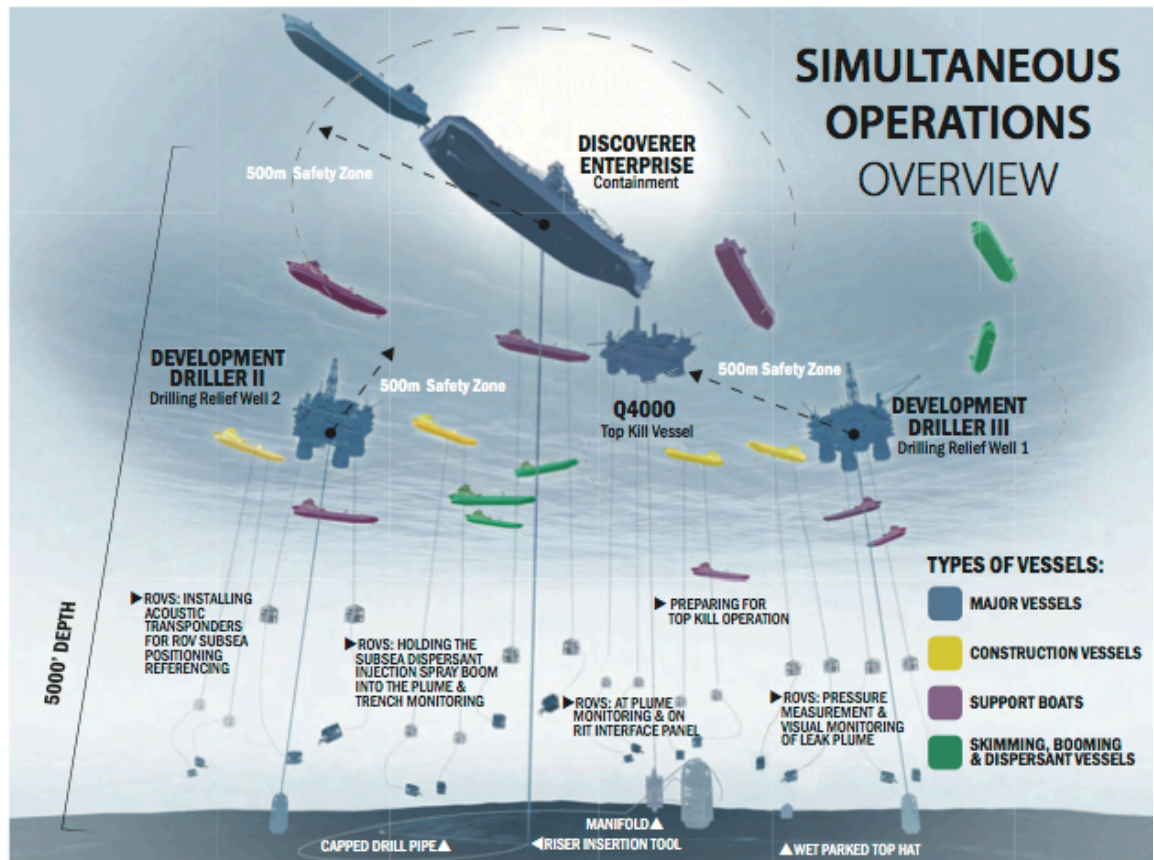
Lastly, the response operation exhibited joint decision-making processes and collaborative oil recovery operations. Despite instances of independent state and local decision-making and operations, the National Incident Commander and his subordinates maintained the integrity of the coalition that comprised the unified command, gradually re-integrating state and local authorities through accommodation when necessary.

Situational Awareness

Situational awareness can be assessed along a continuum. At its most basic, situational awareness requires a broad understanding of the scope and general nature of a crisis at a given point in time. At its most advanced, situational awareness includes a comprehensive understanding of a situation in real-time, in both strategic and tactical terms.

By this standard, the situational awareness of the Coast Guard and its response partners was mixed. Commanders developed an increasingly sophisticated and accurate real-time understanding of operations on the water's surface to include the location and disposition of pollutants, vessels, response teams, and equipment. However, situational awareness below the sea's surface remained limited throughout the duration of the crisis. Critical information, including the exact engineering specifications of the blowout preventer, the damage sustained by the wellhead and associated infrastructure, the presence of oil in the water column, and, most critically, the flow-rate of oil escaping from the well, was not readily ascertainable. In summary, situational awareness on and above the sea's surface was strong while situational awareness below the surface was poor.

The National Incident Command rapidly developed the infrastructure and processes necessary to achieve situational awareness on the surface. The first step was to provide for a comprehensive communications infrastructure. With the support of the BP information technology unit, the federal on-scene coordinator established an integrated communications network to support tactical communications.[926] The federal on-scene coordinator directed the construction of 26 radio repeater towers to provide coverage throughout the response zone and established communications links among the incident command posts, branch offices, response vessels, aviation units, and shore teams.

Next, the federal on-scene coordinator leveraged the resources of the National Operations Center (formerly the Homeland Security Operations Center), the primary national-level hub for national situational awareness and the development of a common

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[926] "Deepwater Horizon Containment and Response: Harnessing Capabilities and Lessons Learned," 42.

operating picture. The National Operations Center supported national decision-makers by collecting information from many sources and synthesizing it into a coherent narrative.[927]

However, information management problems grew to the point that they hindered the execution of operational activities and threatened ability of the National Incident Command to exercise timely command and control over the incident command posts and branches. Frustrated responders lamented that they were too busy "feeding the [bureaucratic] beast" to focus on what was truly important in the field.[928] Instead of supporting operations in the field, communications from the National Incident Command and incident command posts more often involved requests for data to respond to information requests from senior officials. Lengthy Incident Action Plans, the daily playbook establishing objectives and assigning tasks, were too dated by the time of their completion and transmission to serve their intended purpose. Efforts to achieve situational awareness were hindered by lack of agreement on what data needed to be tracked, the vast geographic scope of the catastrophe, limited interoperable communications technology, a constrained ability to push information vertically and horizontally throughout the organization, and competing standards.[929]

These barriers were overcome through information technology upgrades and process improvements.[930] Through collaborative technical efforts with BP, the National Operations Center, and others, the National Incident Command developed a remarkable real-time common operating picture. The common operating picture integrated more than 200 previously disparate data types and provided a comprehensive assessment of the

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[927] *DHS Planning and Response: Preliminary Lessons from Deepwater Horizon*, 45.
[928] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 97.
[929] Ibid. 52.
[930] Ibid. 52.

response effect.[931] The National Incident Command employed the geographic

information system-based Environmental Response Management Application, which

allowed for the end user to customize the data displayed and facilitated real-time

reporting. It also allowed for unprecedented transparency by enabling the National

Incident Command to make selected data layers visible (e.g. the position of the oil slick)

to the public on an open website.[932] Decision-makers were able to access the common

operating picture from fixed and mobile platforms to input and review data. The National

Incident Command also employed relatively new Automatic Identification Software,

which employs transponders placed on ships to provide real-time visualization,

identification, and tracking of vessels on graphic displays.[933] As a result, responders were

able to track the location of oil slicks, vessels, boom, and in-situ burn sites, and make

operational decisions accordingly.

Process improvements were also an essential element of responders' efforts to

achieve situational awareness. Crucially, the unified area command eventually combined

requirements and defined key terms so that a single, simplified report could be generated

that was responsive to most conceivable requests.[934] New incident command system

positions, such as the Request for Information Unit in the unified area command and the

establishment of the Parish President Liaison Officers Program improved information

management.[935] Similarly, The National Incident Command established the Interagency

Solutions Group to replace the re-purposed National Response Team. The Interagency

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[931] "Deepwater Horizon Containment and Response: Harnessing Capabilities and Lessons Learned," 40.

[932] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 52.

[933] "Deepwater Horizon Containment and Response: Harnessing Capabilities and Lessons Learned," 18.

[934] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 96.

[935] Ibid. 97.

Solutions Group coordinated and resolved emergent issues, brokered resources and expertise among responding agencies, served as a forum through which the National Incident Command could elicit input and support from across the Federal Government, and acted as the National Incident Command's personal "think tank."[936] A principal concern of the National Incident Command was determining the flow-rate of the leak so that an appropriate response could be organized. The National Incident Command directed the Interagency Solutions Group to establish a Flow Rate Technical Group to develop scientifically based estimates of the flow rate at the wellhead.

Technical interoperability

The Coast Guard worked closely with BP and other entities to achieve technical interoperability among responding organizations. Over the course of the response operation, communications integration and situational awareness improved significantly. Responders used a variety of information systems, including Homeland Security Information Network Jabber Chat, collaborative incident management software called WebEOC, and the Automatic Identification System (to facilitate vessel identification, tracking, and communications).

However, responders did struggle with four challenges to the integrated communications network. First, these systems were new to most users. Second, urgent requests for information, typically originating from political authorities instead of operational decision-makers, often circumvented established reporting mechanisms and siphoned off substantial manpower.[937] Third, communications with some of the more remote branches were difficult and unreliable due to a variety of factors. Most typically,

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[936] Ibid. 80-81.
[937] Epperson, "A perspective from within Deepwater Horizon's Unified Command Post Houma," 4.

distance, poor cell phone and mobile email reception, command structure confusion, and competing priorities inhibited communications between incident command posts and branches.[938]

Lastly, communications with civilian vessels participating in the Vessels of Opportunity Program were uneven and unreliable. Although all response vessels were required to have marine radio (VHF-FM) capability, units were either not installed or not used properly, resulting in persistent miscommunication.[939] Similarly, communications between airborne spotters and surface vessels were insufficiently reliable. As a result, skimming vessels could not always avail themselves of the valuable services of response aircraft.[940]

Preparedness

For the purposes of this research, preparedness is operationalized as a function of joint planning, training, and exercises. Indicators of advanced levels of preparedness include the existence of joint operational plans, joint exercises, and social capital or extensive interpersonal ties among responders. By this standard, collective preparedness for the Deepwater Horizon catastrophe was moderate.

The existence of joint operational plans, joint exercises, and social capital among responding organizations presuppose extensive state and local participation. However, state and local officials typically engage in limited oil spill preparedness activities for a number of structural reasons. First, oil spills are usually handled by a specialized oil spill response community. In fact, state involvement is largely limited to a designated state on-

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[938] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 94.
[939] Ibid. 123.
[940] Ibid. 113.

scene coordinator's office.[941] Second, the frequency and severity of oil spills has decreased since the Exxon Valdez disaster and Oil Pollution Act. Practically speaking, many state and local officials are relatively disinterested in contingency planning or are unable to invest the necessary time and resources. Retired Coast Guard Admiral and co-author of the Deepwater Horizon Incident Specific Preparedness Review Report, Roger Rufe, candidly explained this dynamic in congressional testimony:

> …it is much easier for these State and local officials to get up on their high horse and get excited about the fact they weren't included when there is a spill underway. It is anther thing to have them sit through these long, laborious, really difficult meetings, where they have to sit down and decide what are the priorities.[942]

Significantly, joint operational plans did exist prior to the Deepwater Horizon catastrophe. However, these plans were not extensively employed due to a variety of problems including faulty assumptions and a lack of understanding and legitimacy of the National Contingency Plan and its associated plans. In fact, many officials at all levels of government experienced extensive confusion between the National Response Framework and National Contingency Plan.[943]

The Regional Contingency Plan in the Gulf Coast was designated the "One Gulf Plan" and originally created in 2003.[944] The purpose of this document was two-fold: to guide the development of area contingency plans within the region and shape a regional response to a catastrophic spill affecting the region. On both of these counts, the One Gulf Plan was ineffective. Although it was updated on a regular basis by a small community of planners, many officials involved in the Deepwater Horizon response were

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[941] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 71.
[942] *Assuring the Safety of Domestic Energy Production: Lessons Learned from the Deepwater Horizon Oil Spill*, 42.
[943] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 9.
[944] Ibid. 23.

unfamiliar with it. Furthermore, the severity and scope of the Deepwater Horizon incident stretched the limits of the One Gulf Plan. As a result of these two considerations, the One Gulf Plan was largely discarded in favor of state and local response plans developed as the crisis unfolded.

At the local level, the area contingency plans were of uneven quality.[945] However, they proved somewhat more resilient than the regional plan during the throes of crisis. The Deepwater Horizon incident affected two Coast Guard Sectors: Sector New Orleans encompassing Louisiana and a portion of Mississippi and Sector Mobile, which includes the remainder of Mississippi, Alabama, and Northwest Florida. Although these committees are scheduled to meet annually, the Area Committee Sector New Orleans met only seven times in the previous ten years.[946] The most current Sector New Orleans area contingency plan at the time of the Deepwater Horizon Incident was updated in August of 2009. Attendance records in Sector New Orleans indicate that the full charter membership of the area attended the meetings, to include officials from the relevant federal and state agencies. However, no local government or NGO representatives ever attended.[947] Sector Mobile's Area Committee met on a biannual basis but only included local emergency management officials on an irregular basis.[948] In general, only representatives of organizations with daily involvement in pollution prevention and response regularly partook in area contingency plan meetings.[949]

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[945] *Assuring the Safety of Domestic Energy Production: Lessons Learned from the Deepwater Horizon Oil Spill*, 8.
[946] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 13.
[947] Ibid. 13.
[948] Ibid. 13.
[949] Epperson, "A perspective from within Deepwater Horizon's Unified Command Post Houma," 14.

In both sectors, the consequence of this planning process was confusion and the rapid delegitimization of the area contingency plans in the crucible of crisis. The area contingency plans in the Gulf were "inconsistent with regard to quality and content and did not necessarily reflect implementation of national policy."[950] Key weaknesses of the area contingency plans included inadequate participation of Oil Spill Removal Organizations and state and local elected officials, failure to properly account for worst-case discharge scenarios involving offshore oil exploration activities, and inconsistency with one another and regional plans.[951]

Prior to drilling, BP submitted two plans to satisfy Minerals Management Service regulatory requirements. The first was a regional response plan, encompassing multiple wellheads in the vicinity of the Macondo site. The second was specific to the Macondo site. Although the Coast Guard can request to review oil spill response plans at its discretion, this did not happen often, much less in the case of the Deepwater Horizon.[952] Most seriously, both plans were based on flawed assumptions.

Contrary to popular belief, BP did not low-ball a "worst-case discharge," but rather dramatically overestimated the effectiveness of mechanical recovery equipment, such as skimmers. BP's regional response plan forecast a worst-case discharge of 250,000 barrels per day and the Macondo wellhead plan predicted 162,000 barrels per day. BP demonstrated that it maintained contracts with Oil Spill Recovery Organizations capable of achieving an "effective daily recovery capacity" of nearly 492,000 barrels per

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[950] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 16.
[951] The following source attests to the inconsistency of the area contingency plans: "Decision-Making within the Unified Command," 21.
[952] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 28.

day, well in excess of what was needed.[953] In fact, the Deepwater Horizon blowout

resulted in an estimated flow-rate of 60,000 barrels per day and this flow-rate proved to

be far more than BP's assets could manage even when complemented by national and

international response resources. A number of factors, including moderate sea states, poor

oil encounter rates, challenging oil compositions that were incompatible with some

offshore skimming systems, and the inability of the skimmers to deploy within five miles

of the wellhead due to safety concerns, dramatically reduced the effectiveness of

mechanical recovery efforts.[954] Given that skimmers only recovered approximately 3%

of the released oil, it is abundantly clear that the wildly inaccurate "effective daily

recovery capacity" estimates rendered these plans of minimal value.

The Oil Pollution Act established a Spill of National Significance Exercise

Program requiring a national oil spill response exercise on a triennial basis and also

required each area committee to hold a local response exercise with similar frequency.[955]

These exercises focused squarely on critical issues that would later emerge in dramatic

fashion after the explosion aboard the Deepwater Horizon. One of the most prescient

findings emerged in the 2004 spill of national significance after action report. The report

observed that,

> Oil spill response personnel did not appear to have even a basic knowledge of the
> equipment required to support salvage or spill cleanup operations.... There was a
> shortage of personnel with experience to fill key positions. Many middle-level
> spill management staff had never worked a large spill and some had never been
> involved in an exercise. As a result, some issues and complex processes unique
> to spill response were not effectively addressed.[956]

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[953] Ibid. 29.
[954] Ibid. 110.
[955] Epperson, "A perspective from within Deepwater Horizon's Unified Command Post Houma," 14-15.
[956] "California Sons 04: After Action Report," (2004), 46.

However, the spill of national significance program suffered from a number of shortcomings. DHS hosted spill of national significance exercises on six separate occasions in the years preceding the Deepwater Horizon incident, most recently in spring 2010.[957] However, senior leader participation was limited as the exercise series was not designated a higher-profile National Level Exercise series.[958] More damaging still, local government participation was virtually non-existent in the triennial spill of national significance exercises established by Oil Pollution Act.[959] For example, although the 2002 spill of national significance exercise simulated a well blowout approximately 80 miles from the location of the Deepwater Horizon incident, the exercise did not include mayors, parish presidents, or local councils from the affected region.[960] Participation of senior officials in spill of national significance exercises has also been very limited. During the March 2010 spill of national significance exercise in Northern New England, the Assistant Secretary for Intergovernmental Affairs, Juliette Kayyem, was the only senior DHS official to participate. She later cited this experience as being particularly valuable to her work on the Deepwater Horizon incident.[961]

As result of these exercises and routine operations within the oil spill response community, Coast Guard personnel and officials from state and some local agencies maintained high levels of social capital. For example, Coast Guard responders and career state responders were well-connected and familiar with one another.[962] However, professional oil spill responders at the state level were progressively marginalized as state

[957] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 128.
[958] Ibid. 64
[959] Allen, "National Incident Commander's Report: Mc252 Deepwater Horizon," 13.
[960] Ibid; Chris Doane, "2002 Spill of National Significance after Action Report," (2002).
[961] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 129.
[962] "Decision-Making within the Unified Command," 20.

and local elected officials revoked much of their decision-making authority in efforts to centralize control.

Intergovernmental collaboration

<u>Goal agreement</u>

Although inter-organizational and intergovernmental decision-makers generally developed a shared problem definition, they struggled to identify common goals and develop consensus regarding proper clean-up priorities and tactics. However, the National Response System did establish a unified command system that allowed for on-going consensus building throughout the course of the crisis. This, in combination with National Incident Commander Thad Allen's political leadership, contributed to goal alignment.

During Deepwater Horizon response operations, the Coast Guard maintained a complex relationship with its interagency, intergovernmental, and non-governmental partners. Coast Guard operations were driven primarily by its responsibilities for marine environmental protection as defined in Oil Pollution Act and the National Contingency Plan. Naturally, all responding entities shared the goal of stemming the flow of oil from the Macondo wellhead and recovering as much oil as possible before it reached shore. However, shared goals gradually diverged into opposing viewpoints the further the oil spread from the wellhead and the closer it came to shore.

Much of the acrimony and discord among elected officials and responding organizations can be traced to a fundamental disagreement over what constituted an appropriate balance between the protection of economically versus environmentally

sensitive areas. The Coast Guard and, to an even greater extent, the Environmental

Protection Agency, were oriented to mitigate the environmental consequences of the

disaster, and in so doing, to reduce the economic fallout of the entire event. However,

state and local officials were at least as concerned about the short-term economic impact

of the oil spill as they were about the long-term environmental damage. Since local

officials generally did not participate in the development of the area contingency plans

and were not initially integrated into the unified command, there was constant conflict

between the Coast Guard's desire to deploy scarce resources on a strategic basis to

protect vulnerable marshes and vital waterways; there was less emphasis on the

protection of tourist beaches and provision of jobs for out-of-work fishermen.

Conflicting perceptions of the nature of the incident response contributed to a

second persistent dimension of goal divergence throughout the response. Where federal

agencies and departments, such as the Coast Guard, were inclined to prioritize near-shore

operations in a pragmatic, utilitarian manner so as "to do the greatest good for the

greatest number," state and local decision-makers viewed the allocation of response

resources in a zero-sum context. According to this logic, personnel and equipment were

scarce resources and would not be available to protect one's own jurisdiction if they were

deployed to another. The inter-jurisdictional competition that this perspective provoked

occasionally resulted in hoarding of scarce resources and the sub-optimal deployment of

equipment and personnel. For example, the competition for containment boom rapidly

degenerated into "boom wars" among state and local officials. One observer wryly noted

that boom was "eye candy" – seeing it gave politicians a sense of satisfaction even if it did not do much.[963]

Lastly, it is important to acknowledge the peculiar relationship between Coast Guard and BP goals. Although both organizations were determined to cap the well as soon as possible, BP was incentivized to minimize flow-rate estimates and the cost of the clean-up operation. However, this research did not uncover any compelling evidence to support the notion that BP acted on these incentives.

<u>Common understanding of roles and responsibilities</u>

In the context of the Deepwater Horizon incident, the presence of a robust common structure and set of norms would be indicated by a variety of factors. First, responding organizations would employ similar organizational and command structures to facilitate coordination. Second, these organizations would share doctrine and plans that were well understood, coherent, and legitimate. By this standard, the existence of common structure and norms among responding organizations was mixed. Although the National Incident Management System was generally applied effectively, national oil spill response plans and doctrine were not. As a result, there was confusion regarding inter-organizational and intergovernmental roles and responsibilities and the transaction costs of organizing the response were not minimized to the extent envisioned in policy.

The Coast Guard and Environmental Protection Agency adopted the incident command system upon which the National Incident Management System is based as the national spill response structure approximately 15 years prior to the Deepwater Horizon

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[963] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling,"151.

incident.[964] Many agencies were able to provide a core group of qualified personnel with

National Incident Management System training and exercise experience. However, the

scale of the response, and in particular, President Obama's order to triple the number of

personnel assigned to the response, interjected personnel with little or no knowledge of

the National Incident Management System into the response effort. Instead of enabling

the response, these personnel were sometimes a hindrance to the smooth functioning of

response systems and processes.[965] Just-in-time training was provided to novice

responders to accelerate their ability to learn on the job.

Many participants involved in the response indicated that the National Incident

Management System worked as intended.[966] Other reports indicate that in at least some

instances, a number of the basic tenets of the National Incident Management System were

not followed.[967] Responders at the unified area command struggled to implement the

Unified Area Command concept, often straying to provide tactical direction that was

better addressed at the individual incident command posts. These shortcomings are

largely attributable to a lack of National Incident Management System-qualified

personnel in some responding organizations, a shortage of individuals familiar with

particular roles in the National Incident Management System (e.g. Section Chief), and

poor coverage of important topics like the role of the unified area command in existing

training programs.

Admiral Thad Allen famously lamented that oil response doctrine and,

specifically, the National Contingency Plan, was politically and socially nullified over the

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[964] Ibid. 91.
[965] Ibid. 91.
[966] Ibid. 4.
[967] Ibid. 92.

course of the response to the Deepwater Horizon incident.[968] He argued that a poor public understanding of the role of the Responsible Party—BP in this instance—in oil spill response and state and local aversion to federal direction and control of resources in the response were the primary causes of the nullification of existing doctrine and plans.

The National Response Framework was better understood by state and local officials for a number of reasons. First, state and local officials were familiar with the National Response Framework based on the frequency of Stafford Act disasters, such as hurricanes, relative to Oil Pollution Act disasters, such as oil spills. Second, state and local officials naturally favored the "bottom-up" principles of the National Response Framework over the "top-down" command and control structure of the National Contingency Plan, especially within the "home rule political economy" of Louisiana. Third, the National Response Framework was promoted through advocacy and grant programs, particularly in the wake of weaknesses exposed by Hurricane Katrina, to an extent that the National Contingency Plan was not. Policymakers may have successfully learned this lesson from the caustic experience of the Hurricane Katrina response, but they failed to transfer it to the closely related domain of oil spills and the National Contingency Plan.

Despite shortcomings in understanding and legitimacy, there is reason to believe that existing oil spill response governance arrangements are largely appropriate. One powerful indicator of the effectiveness of the common structures and norms underpinning the Deepwater Horizon response was the general satisfaction of key leaders active in the response with existing laws, plans, and doctrine. National Incident Commander, Admiral Thad Allen, and long-serving federal on-scene coordinator, Admiral Zukunft, each

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[968] Allen, "National Incident Commander's Report: Mc252 Deepwater Horizon," 4.

recommended mild reforms but forthrightly commended the Oil Pollution Act and

National Contingency Plan as sound and effective.[969] Further, the dynamic evolution of

the response is testament to the flexibility of these structures and norms. The scale and

scope of the response attests to its utility in even the most catastrophic scenarios.

Political coordination process

Political coordination proved to be a critical challenge in the management of the

Deepwater Horizon incident. The pronounced national profile of the disaster, the many

state and local jurisdictions affected, the "home rule economy" of the Gulf region, and

the fact that the governors of the impacted states were from another party than that of the

president exacerbated political tensions. In the context of the Deepwater Horizon

incident, indicators of effective political coordination would include the existence of

political coordination mechanisms in existing institutional structures and plans, the

absence of "defection" among political decision-makers to independent operations, and

trusting relationships among political authorities. By this standard, political coordination

was poor during the Deepwater Horizon response. Established resource brokering

mechanisms and conflict resolution processes were overwhelmed by high-level political

intervention in even the most tactical policy questions, such as boom deployment.

However, political coordination did improve as the crisis continued through specific

institutional innovations and collaborative leadership.

Plans and doctrine related to oil spill response—and domestic incident

management more generally—do not include effective institutions or processes to

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[969] Committee on Transportation and Infrastructure, *Assuring the Safety of Domestic Energy Production: Lessons Learned from the Deepwater Horizon Oil Spill*, First Session, November 2, 2011; Allen, "National Incident Commander's Report: Mc252 Deepwater Horizon."

achieve intergovernmental political coordination in the event of high profile catastrophes. Although this problem is widely acknowledged among scholars and former policymakers, neither the National Incident Management System nor the National Contingency Plan include robust mechanisms to integrate elected officials into operational decision-making. This is particularly problematic in catastrophic scenarios and novel incidents because unelected officials often lack the legitimacy to make life-or-death decisions or broker resources across jurisdictions in zero-sum scenarios. Unfortunately, these shortcomings were not overcome through the most local elements of the National Contingency Planning process, the production of area contingency plans. The area contingency plan development process failed to facilitate direct communication and dialogue with state and local officials.[970] During the Deepwater Horizon incident and other recent spills, including the Cosco Buzan incident in San Francisco Bay in 2007, decision-makers such as the federal on-scene coordinator were buffeted by tremendous political pressures that undercut collaborative efforts and negatively affected operational outcomes.[971]

Second, political decision-makers at the state and local level repeatedly resorted to a strategy of periodic defection from the unified command and existing plans in order to exercise autonomous power at the expense of the collective. Defection manifested itself in three forms. The most benign method of defection involved direct appeals to higher authorities in the Federal Government to circumvent the authority of the National Incident Commander and "short-circuit" more collaborative forums. The approval of the controversial Louisiana berms project is an example of this dynamic in action.

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[970] Ibid. 6.
[971] Ibid. 6.

A second method of defection occurred when elected officials resorted to excoriating the response in the national press. Seven weeks into the response, Billy Nungesser, the president of Plaquemines Parish complained that he still wasn't sure who was in charge of the response exclaiming, "Is it BP? Is it the Coast Guard?"[972] Often, these press briefings focused on a particularly visible aspect of the response, such as the absence of boom from a particular stretch of coastline.

The third and most serious method of defection involved the establishment of independent operations outside the scope of the unified command. For example, when local officials became frustrated with the administration of the Vessels of Opportunity Program, they started their own parish programs, ran uncoordinated operations, and sent BP the bill. In some cases, the affected state governments acted similarly.[973]

Lastly, political officials involved in the crisis did not uniformly enjoy trusting relationships. The aforementioned strategies of defection led to recrimination and resentment. Governor Bobby Jindal of Louisiana repeatedly held news conferences in the same spot of oiled marsh to criticize the national response. When the Coast Guard sought to locate the oiled marsh to clean it up, the Governor's Office refused to confirm its location.[974] This vicious cycle of political grandstanding and blame-shifting was only gradually broken through institutional innovation and collaborative leadership.

Innovation and adaptation took many forms. Shortly after the crisis began, the White House initiated daily governors' calls for state and local elected officials. However, this forum alone proved inadequate. The Secretary of Homeland Security and National Incident Commander undertook a number of reforms to improve political

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[972] Robinson, "Efforts to Repel Gulf Oil Spill Are Described as Chaotic."
[973] "Decision-Making within the Unified Command." 17.
[974] "Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling," 139.

coordination over the course of the response. First, strategic and operational objectives were repeatedly modified in response to political pressure.[975] Secretary Napolitano and the National Incident Commander, fearing a collapse in the collaborative effort to respond to the spill, directed responders to "do whatever it takes to make the Parishes happy."[976] As a result, the incident command posts and branches deliberately prioritized projects not solely for their operational effect but their political impact as well. The National Incident Commander also decentralized decision-making authority to the branches in order to improve responsiveness to local concerns. Similarly, the Parish President Liaison Program, consisting of more than 70 senior coast Guard officers, facilitated the participation of local officials in decision-making.[977] Lastly, the Interagency Solutions Group proved a valuable mechanism through which the National Incident Command managed strategic and political challenges.

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[975] "BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review," 75.
[976] Ibid. 76.
[977] Ibid.77.

Chapter 7: Theoretical and Policy Conclusions

The conventional wisdom regarding perceived failures in national and homeland security is varied but revolves around common themes. The terrorist attacks of September 11, 2001, were famously deemed a "failure of imagination" by the National Commission on Terrorist Attacks Upon the United States.[978] Similarly, the House Report on Hurricane Katrina designated the halting response to Hurricane Katrina "a failure of initiative."[979] The scholarly literature on these failures adds little depth to these analyses, focusing predominantly on the role of leadership, bureaucratic politics, trust, and similar factors to explain poor outcomes. Collectively, these narratives are often overly-simplistic and place too much emphasis on individual leaders and too much faith in organizational re-shuffling.

Moreover, the policy and scholarly literatures agree that collaboration and coordination are pivotal to operational success in catastrophic contingencies. After-action reports related to the Hurricane Katrina and Deepwater Horizon catastrophes almost universally recommend a renewed focus on collaborative performance. Yet, few studies or policy reports provide in-depth analysis of collaborative performance in real-world crises to advance our understanding of the myriad factors that affect collaborative performance.

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[978] "Final Report of the National Commission on Terrorist Attacks Upon the United States," (Washington, DC: National Commission on Terrorist Attacks Upon the United States, 2004).
[979] "A Failure of Initiative," (U.S. Congress, House Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, 109th Congress, 2nd Session, 2006).

This research begins to address this shortcoming by organizing multi-disciplinary theories into a unified framework and applying it to critically examine collaborative performance in the aftermath of Hurricane Katrina and the Deepwater Horizon incident. The insights provided through this theoretically informed and empirical approach expand the discourse on collaborative performance to improve our understanding of the many organizational, inter-organizational, and intergovernmental factors that affect collaborative performance. Furthermore, this inductive approach improves our understanding of how these many factors relate and interact to produce outcomes.

This chapter will review the fundamental questions that motivate this research before concluding with a comparative analysis of the two case studies. This research is animated by three closely related questions:

Q1: Why do organizations attempting to collaborate in crisis response scenarios experience varying levels of collaborative performance?

   Q1A: What factors affect inter-organizational collaboration?

   Q1B: What factors affect intergovernmental collaboration?

In an effort to address these questions, this research first evaluated an expansive and complex body of literatures to develop a coherent theoretical framework (see Figure 30: Unified Theoretical Framework). This multi-disciplinary framework was then applied to two case studies in order to develop theoretically driven insights regarding the collaborative performance of the Coast Guard and FEMA in Hurricane Katrina response operations and the Coast Guard in the aftermath of the BP Deepwater Horizon Incident. Naturally, there is significant overlap between factors supporting inter-organizational and intergovernmental collaborative performance. This overlap is most significant with respect to the value of a unified command, preparedness, learning and adaptation, and

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goal agreement. This chapter will assess the findings derived from the case studies in order to assess the value of the framework, identify opportunities to improve collaborative performance, and propose areas for further research.

Figure 30: Unified Theoretical Framework

Inter-organizational Collaboration	
Summary Variable	*Contributing factors*
Inter-organizational power dynamics	Authorities/shared goals
	Political support
	Funding and assets
	Suitably trained staff
	Surge capacity
Collaborative culture	Perceptions of costs/benefits of collaboration
	Trust, reputation, reciprocity
	Leadership
	Joint decision-making processes
	Conflict resolution mechanisms
	Personnel incentive structures
Organizational learning & adaptation	Organizational learning capacity
	Adaptive capacity
Unified command	Shared situational awareness
	Interoperable communications
	Operational coordination
Preparedness	Joint planning
	Training
	Exercises

Intergovernmental Collaboration	
Summary Variables	*Contributing Factors*
Goal agreement	Shared problem definition
	Common ends
	Common methods
Common understanding of roles & responsibilities	Governmental & organizational roles understood
	Existence of norms reducing transaction costs
Political coordination process	Resource brokering
	Conflict resolution

Hurricane Katrina

The conventional wisdom regarding the response to Hurricane Katrina concludes that the Coast Guard executed a world-class collaborative response and that FEMA stumbled incessantly under the wanting leadership of Michael Brown. In fact, this analysis paints a more complex picture. Although the Coast Guard search and rescue response was heroic and operationally effective in many respects, it was not an example of strong collaborative performance. FEMA's response was neither operationally effective nor a collaborative success but the causes of these shortcomings were far deeper than "failures of initiative" or simple deficits of trust.

This section summarizes and compares the case-specific findings of the preceding analyses to explain Coast Guard and FEMA collaborative performance in-depth. Table 8 associates contributing factors with each summary variable and assigns a "+" symbol to denote the presence of attributes favorable to collaborative performance and a "-" symbol to signal their near or total absence. Although this scale dramatically simplifies the preceding qualitative analysis, it usefully highlights areas of relative strength and weakness and helps to explain how the summary variables and contributing factors interact.

Table 8: Hurricane Katrina Findings

Inter-organizational Collaboration		Katrina	
Summary Variable	*Contributing factors*	Coast Guard	FEMA
Inter-organizational power dynamics	Authorities/shared goals	+	-
	Political support	+	-
	Funding and assets	+	-
	Suitably trained staff	+	-
	Surge capacity	+	-
Collaborative culture	Perceptions of costs/benefits of collaboration	+	+
	Trust, reputation, reciprocity	+	-

	Leadership	+	-
	Joint decision-making processes	-	-
	Conflict resolution mechanisms	-	-
	Personnel incentive structures	+	-
Organizational learning & adaptation	Organizational learning capacity	+	-
	Adaptive capacity	+	-
Unified command	Shared situational awareness	-	-
	Interoperable communications	-	-
	Operational coordination	-	-
Preparedness	Joint planning	-	-
	Training	+	+
	Exercises	+	+
Intergovernmental Collaboration			
Summary Variables	*Contributing Factors*	**Coast Guard**	**FEMA**
Goal agreement	Shared problem definition	+	+
	Common ends	+	+
	Common methods	+	-
Common understanding of roles & responsibilities	Governmental & organizational roles understood	-	-
	Existence of norms reducing transaction costs	+	-
Political coordination process	Resource brokering	N/A	-
	Conflict resolution	N/A	-

As illustrated above, the Coast Guard possessed many of the attributes

theoretically associated with strong collaborative performance. Of particular note, the

Coast Guard organization was well-positioned to manage inter-organizational power

dynamics, nurtured mature organizational learning and adaptation capacities, and

maintained a robust preparedness program with the exception of joint search and rescue

planning. However, weaknesses in the domain of joint decision-making processes,

planning, and conflict resolution mechanisms manifested during the post-storm crisis to

hinder the establishment of a unified command. In fact, the Coast Guard was unable to

establish a unified command for search and rescue until September 5[th].

With respect to inter-governmental collaboration, the Coast Guard encountered similar problems. Key search and rescue partners, including Louisiana Wildlife and Fisheries, were state agencies. Although Coast Guard officials and state and local officials developed strong goal agreement during the crisis, the salience of search and rescue preparedness and planning issues was far less significant prior to the storm's landfall. As a result, joint planning was inadequate, critical local agencies such as the New Orleans Police Department and New Orleans Fire Department lacked essential equipment including boats, and there was extensive confusion regarding roles and responsibilities. Consequently, the Coast Guard and its partner agencies resorted to improvisation and tacit coordination throughout the early stages of the response.

FEMA was far less favorably disposed to achieve strong collaborative performance in the aftermath of Hurricane Katrina. In fact, this analysis makes clear that FEMA lacked nearly all of the organizational, cultural, and learning and adaptation attributes associated with collaborative performance. Although FEMA officials recognized the value of collaboration, they were largely unable to support collaborative initiatives as a result of serious organizational shortcomings including staffing weaknesses, resource shortfalls, and leadership failures within FEMA and DHS more broadly. Most seriously, it is abundantly clear that the removal of preparedness responsibilities and resources (e.g. grants) from FEMA severely undermined the agency's ability to develop and sustain pre-crisis partnerships. As local and state unified commands were promptly overwhelmed in the early stages of the storm, FEMA lacked the capability and political will to assume a more proactive posture in the mediation of collaborative arrangements.

Inter-governmental collaboration mediated by FEMA was undermined by many of the same organizational capacity weaknesses and two additional factors. First, poor understanding of the National Incident Management System and the National Response Plan precluded the emergence of a common understanding of roles and responsibilities. Second, the absence of a functioning political coordination process hindered resource brokering and conflict resolution among affected jurisdictions. As a result, intergovernmental operations were largely uncoordinated and elected and appointed officials at all levels of government resorted to blame-shifting behavior.

Deepwater Horizon

The Coast Guard experience in relation to the Deepwater Horizon incident provides an incisive contrast to the Hurricane Katrina case study. The collaborative performance of the Coast Guard was uniformly strong at the interagency level, weak at the intergovernmental level of analysis, but improved significantly as the crisis developed. The table below summarizes the presence of specific attributes favorable to collaborative performance. This analysis reveals strengths similar to those exhibited by the Coast Guard in 2005 in the aftermath of Hurricane Katrina with important caveats.

Table 9: Deepwater Horizon Findings

Inter-organizational Collaboration		Deepwater Horizon
Summary Variable	*Contributing factors*	**Coast Guard**
Inter-organizational power dynamics	Authorities/shared goals	+

	Political support	+
	Funding and assets	-
	Suitably trained staff	-
	Surge capacity	+
Collaborative culture	Perceptions of costs/benefits of collaboration	+
	Trust, reputation, reciprocity	+
	Leadership	+
	Joint decision-making processes	+
	Conflict resolution mechanisms	+
	Personnel incentive structures	+
Organizational learning & adaptation	Organizational learning capacity	-
	Adaptive capacity	+
Unified command	Shared situational awareness	+
	Interoperable communications	+
	Operational coordination	+
Preparedness	Joint planning	-
	Training	+
	Exercises	-
Intergovernmental Collaboration		
Summary Variables	*Contributing Factors*	**Coast Guard**
Goal agreement	Shared problem definition	+
	Common ends	+
	Common methods	+
Common understanding of roles & responsibilities	Governmental & organizational roles understood	-
	Existence of norms reducing transaction costs	+
Political coordination process	Resource brokering	-
	Conflict resolution	-

Here again, the Deepwater Horizon incident demonstrated that the Coast Guard

retains many of the attributes associated with high collaborative performance. However,

since the Deepwater Horizon incident stressed a different set of capabilities—those

related to marine environmental protection—rather than the search and rescue capabilities

tested in the Hurricane Katrina case study, new weaknesses are revealed. Most notably,

this research documented serious resource unique to marine environmental protection and

broader staffing shortcomings that undermined collaboration. Similarly, the Coast Guard demonstrated a persistent inability to institutionalize important lessons learned from previous oil spills and exercises. Fortunately, the Coast Guard was able to compensate for this deficiency through ongoing adaptation, which explains much of the trajectory of the response. Preparedness for oil spills was weaker than it could have been as a result of a lack of scale and intergovernmental participation in planning and exercises. The key strength of the Coast Guard's Deepwater Horizon response was its ability to establish a unified command to promote situational awareness, joint communications, and operational coordination. However, state and local officials repeatedly defected from the unified command in order to pursue independent action when it suited parochial interests. Through institutional innovation, including the creation of new coordination groups and liaison programs, as well as the leadership of Admiral Thad Allen, the Coast Guard was able to maintain a resilient command and control apparatus.

Intergovernmental collaboration was initially very weak and suffered repeated setbacks but gradually improved as the Coast Guard adapted to better accommodate state and local concerns. Although there was extensive disagreement among intergovernmental officials regarding response priorities and tactics—such as the use of specific dispersants—the Coast Guard established forums and processes to gradually align interests and achieve accommodation. The signal failings of the Coast Guard's intergovernmental collaborative efforts are two-fold.

First, the principal plans and doctrine designed to govern the oil spill response were poorly understood and effectively deemed illegitimate by state and local political officials. The National Contingency Plan and its regional and local equivalents were, in

the memorable words of Admiral Allen, "socially and politically nullified."[980] As a result, previous planning, training, and exercise efforts were seriously devalued.

Second, the absence of an effective political coordination process in the initial weeks of the crisis seriously compromised the effectiveness of the response. Ongoing disputes related to the deployment of scarce resources such as boom and the decision-making of the National Incident Commander resulted in discord, defection, and delay. A slow and costly process of institutional innovation eventually developed ad-hoc solutions including the Parish Officers Liaison Program to incorporate local officials into decision-making, but this was only necessary because the Coast Guard had failed to institutionalize lessons learned in previous incidents.

Comparative Analysis

Within-case and cross-case comparison offers additional insights related to collaborative performance. It is useful to consider key distinctions, commonalities, and the effect of the intervening five years between the two catastrophes with respect to learning and progress on the respective outcomes.

Distinctions

Most notably, the collaborative governance arrangements related to each case were rooted in opposing governance approaches. The Hurricane Katrina response was governed by the Stafford Act and constituted a traditional, bottom-up response characterized by state primacy and federal support. The Deepwater Horizon incident was

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[980] Allen, "National Incident Commander's Report: Mc252 Deepwater Horizon," 4.

governed by the Oil Pollution Act and constituted a non-traditional, top-down response characterized by federal primacy supplemented with non-federal support.

The unified command structure established by the Stafford Act and the National Response Plan failed dramatically in the state of Louisiana in the aftermath of Hurricane Katrina. The unified command structure established by the Oil Pollution Act, the National Response System, and the National Contingency Plan proved resilient throughout the Deepwater Horizon response. This relative success is remarkable considering that many of the same problems that plagued the National Response Plan during Hurricane Katrina in 2005 also affected the National Contingency Plan. Most notably, responders were generally unfamiliar with both national plans and many officials did not view them as legitimate.

Two considerations may help explain this divergence in outcomes. First, the National Incident Management System was well-understood and legitimate among responders to the Deepwater Horizon incident in 2010 while this was not the case among responders to Hurricane Katrina in the same region in 2005. The National Incident Management System provided a common, scalable, and flexible doctrine and organizational framework that allowed for tacit coordination and rapid integration of independent efforts as political winds shifted.

Second, the National Contingency Plan required a proactive and directive federal response whereas the National Response Plan allowed for federal command and control only under specific circumstances. Thus, the federal Deepwater Horizon response was not hindered by uncertainty regarding the appropriate role of federal responders (in the minds of federal officials, at least).

This research suggests that collaborative performance is not better or worse under one construct or the other. However, the challenges to collaboration are in some respects unique in each case. Bottom-up designs are heavily dependent upon the emergency management capacity of state and local authorities and their familiarity with relevant plans and doctrine. Top-down designs require extensive political engagement and coordination activities to provide elected officials the opportunity to influence federal decision-making. Therefore, it is sensible to employ bottom-up management constructs for incidents with primarily parochial effects requiring widely-shared response capabilities. Incidents, such as the Deepwater Horizon catastrophe, with clear regional, national, and even international implications, which also require highly specialized response assets are better managed from the top-down. Arguably, this is the only circumstance wherein a top-down governance arrangement is appropriate (see below).

Figure Table 10: A logic of crisis governance

Response Asset Requirements

Consequences		Non-specialized	Specialized
	Parochial	Bottom-up	Bottom-up
	National	Bottom-up	Top-down

Second, this research showcases contrasting cultures between FEMA in 2005 and the Coast Guard in 2005 and 2010. This research concretely demonstrates how organizational culture affects decision-making and collaborative performance during crises. The contrasting cultures of the Coast Guard and FEMA are manifested in their distinct approaches to the uncertainties and challenges of catastrophic incident

management. This study suggests that the Coast Guard's "multi-mission culture" represents a uniquely valuable model for emulation for civilian agencies and military entities supporting civilian authorities. However, this research also underscores the intricate relationship between authorities, resources, and mission space to the development and maintenance of a collaborative culture. This finding helps to explain why it is so easy to describe what a collaborative culture looks like and yet so difficult to instill one in an organization where it does not yet exist.

Commonalities

The case studies demonstrate that collaborative capacity is distinct from operational outcomes. As the experience of the Coast Guard in Hurricane Katrina attests, it is possible to achieve a successful operational outcome in spite of poor collaborative performance. However, this research suggests that poor collaborative performance effectively functions as a "brake" on operational performance.

The case studies both highlight the prominent role of technological accidents and "built vulnerabilities" in catastrophic contingencies. The most vexing catastrophes commonly involve compound disasters that combine an exogenous incident (i.e. a natural disaster or terrorist attack) with a technological accident. Compound disasters amplify the effects and complexity of each element. Hurricane Katrina combined a weather event with levee failures. Deepwater Horizon was precipitated by a technological accident in the form of a well blowout and sustained by an unfortunate series of complementary technological accidents that prevented the prompt resolution of the gushing wellhead. Other recent catastrophes, such as the 2011 Fukushima earthquake, tsunami, and nuclear disaster fit a similar mold. Although scholars generally recognize a distinction between

routine and novel incidents, the consistent presence of a technological accident in compound incidents and its implications warrants further investigation. Significantly, current trends in global economic development, the diffusion of technology, and property development suggest that compound disasters are likely to grow more frequent and consequential.

Inter-organizational collaboration

Of course, a number of common themes permeate both cases. Most notably, organizational capacity emerged as the foundation of collaborative performance. The ability (or inability) of FEMA and the Coast Guard to sustain internal information systems, manage communications, maintain cogent decision-making processes, channel resources, and surge staff during Hurricane Katrina and Deepwater Horizon response operations proved critical to collaborative performance. As FEMA became increasingly overwhelmed in the early hours of the Hurricane Katrina crisis, the agency's internal systems and external coordination processes began to malfunction en masse. This state of relative internal paralysis decisively undermined FEMA's capacity to collaborate with its partners since it could not reliably fulfill obligations. The opposing experience of the Coast Guard in the Hurricane Katrina and Deepwater Horizon crises provides an insightful contrast. As internal cohesion degrades, essential elements of collaborative relations, such as interpersonal trust, are diminished, contributing to a vicious cycle that culminates in deliberate decisions by agency partners to abandon collaborative efforts with the failing organization altogether.

Similarly, both cases demonstrate that collaborative performance is about much more than enlightened leadership. This research marks a significant departure from

traditional models of collaborative performance that focus predominantly on the centrality of leadership to collaborative success. This theoretical framework does not deny the importance of leadership in collaborative performance, but rather further develops this notion by explaining exactly why, when, and how leadership can contribute to or detract from collaborative success. By reframing the role of leadership, this research focuses attention on the specific tasks of collaborative leadership as elucidated in the summary variables that constitute the theoretical framework.

Both cases also underscore the difference between organizational learning *between* incidents and exercises and adaptation *during* dynamic operations. This research demonstrates that organizational learning between incidents and exercises provides policymakers with an invaluable opportunity to limit the need for costly adaptation during incident response operations through pre-event institutionalization of lessons learned. Although the need for adaptation to emergent circumstances can never be eliminated, it can be mitigated through deliberate organizational learning. The inverse aspects of the relationship between organizational learning and adaptation are generally under-appreciated and warrant further study.

Shortcomings in situational awareness also plagued both responses to varying degrees. Catastrophes, to a greater extent than even disasters and other emergencies, typically deny a degree of situational awareness to responders and policymakers. During Hurricane Katrina response operations, communications and transportation infrastructure degradation, flooding, and reports of armed gangs denied responders the ability to rapidly establish full-spectrum situational awareness. During the Deepwater Horizon response, these types of challenges did not apply on and above the sea's surface or ashore.

However, responders struggled to develop situational awareness below sea level at the focal point of the crisis: the Macondo wellhead. Despite the presence of advanced equipment such as a fleet of remotely operated vehicles capable of operating in the austere environment surrounding the wellhead, responders did not possess a sufficient knowledge base regarding these types of incidents and lacked the methods and tools to collect and accurately interpret data regarding the flowrate of escaping oil or the disposition of oil in the water column. These cases demonstrate the value of teams and assets capable of restoring and maintaining situational awareness in all types of compromised post-disaster environments.

Intergovernmental collaboration

This research suggests that the existence of common goals among collaborating agencies is a necessary but insufficient condition for collaborative success. In the case of the Coast Guard response to Hurricane Katrina, a lack of urgency associated with shared goals concerning search and rescue planning and interoperability was not overcome until the storm had made landfall. With regards to FEMA in Hurricane Katrina, the existence of shared goals was undermined by disagreement over how objectives should be pursued, disputes over reputational concerns, informational shortcomings, and FEMA's internal capacity constraints.

This study also underscores the importance of the shared understanding and legitimacy of interorganizational systems to collaborative performance. In both cases, national plans and doctrine were inadequately developed, poorly understood, and viewed as illegitimate by key officials notionally responsible for their implementation. During the Hurricane Katrina response, the National Incident Management System and National

Response Plan were not widely understood and implemented. During the aftermath of the Deepwater Horizon incident, the National Contingency Plan and its regional and local supplements were poorly understood beyond the oil spill response community, resulting in their delegitimization as the scope and severity of the incident prompted the intimate involvement of senior elected officials at all levels of government.

The absence of robust political coordination mechanisms during both the Hurricane Katrina and Deepwater Horizon response operations was a striking and significant shortfall. Much of the disarray of the intergovernmental response to Hurricane Katrina is attributable to the absence of robust political coordination processes. With respect to the Deepwater Horizon incident, the lack of political coordination processes at the onset of the crisis resulted in the disenfranchisement of many state and local officials from the unified response effort and occasionally resulted in a temporary splintering of elements of the unified command. This shortcoming was addressed through the remarkable leadership of Admiral Thad Allen and a process of incremental adaptation exemplified by the establishment of daily state and local conference calls, the outreach activities of the Interagency Solutions Group, the Parish Presidents Liaison Program, and other initiatives. Notably, this experience validated the utility of the National Incident Commander in the management of political and strategic concerns. This adaptive process of institutional experimentation was ultimately rather successful but was only necessary because of failures in organizational learning, such as the failure to institutionalize prescient lessons learned from previous events and exercises.[981] The tremendous political and operational costs of this process of adaptation were at least partially avoidable.

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[981] For example, the Coast Guard established a local government liaison program in the weeks after Hurricane Katrina but failed to institutionalize this lesson for future contingencies. As a

Time-phase comparison

In this comparative analysis, it is also important to recognize that five years passed between the Hurricane Katrina and Deepwater Horizon incidents. This is important because the passage of time allowed for evolution and learning prior to the Deepwater Horizon incident in 2010. This concluding section investigates the effect of the continuing integration of FEMA and the Coast Guard into the DHS and evaluates the extent to which learning from Hurricane Katrina was exemplified in the Deepwater Horizon response.

Figure 31: The Coast Guard and FEMA within the Department of Homeland Security in August of 2005[982]
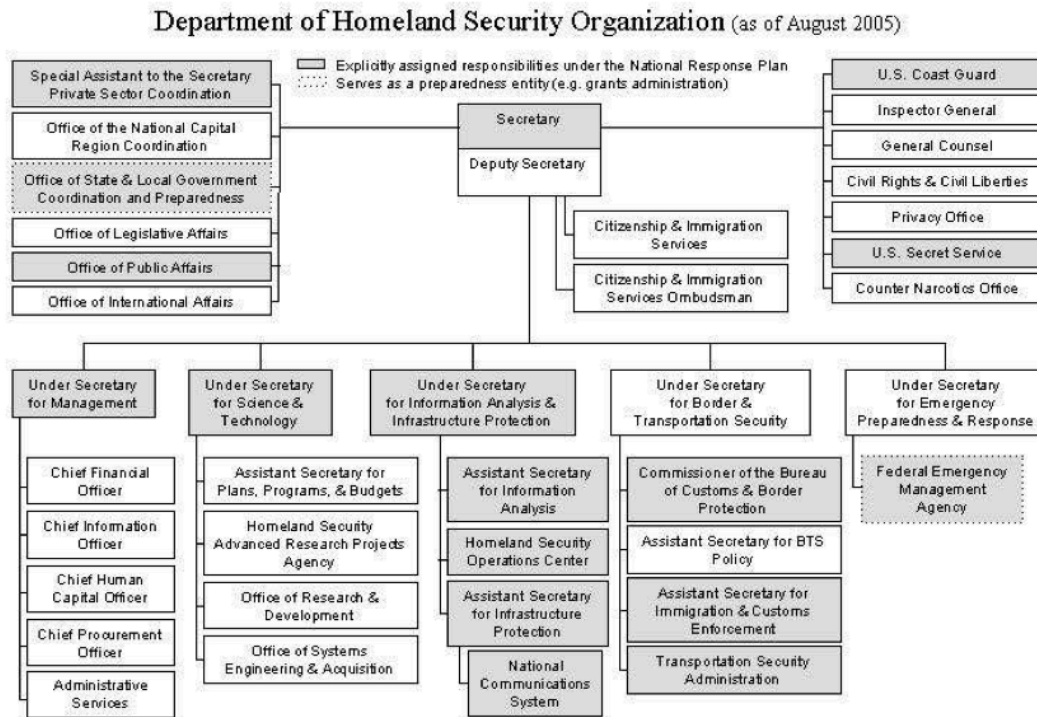
Department of Homeland Security Organization (as of August 2005)

[982] "A Performance Review of FEMA's Disaster Management Activities in Response to Hurricane Katrina," 181.

As Hurricane Katrina swept ashore in 2005, FEMA and the Coast Guard were still adjusting to their incorporation into the DHS only three years earlier. Advocates of this new bureaucratic arrangement anticipated significant dividends from the consolidation of many federal homeland security authorities into a single department. Under a single administrative authority, many hoped that the component agencies would better align and integrate their programs prior to crises. Moreover, during crises, the secretary of homeland security could draw upon his or her powers to direct rather than coordinate the activities of component agencies.

However, Hurricane Katrina demonstrated that the true near-term effects of this consolidation were largely inconsequential or decidedly negative. Instead of aligning and integrating programs, the new department simply re-oriented many programs to address counterterrorism priorities as this was the departmental leadership's preferred interpretation of its primary mission. As discussed extensively in the preceding chapters, FEMA lost resources, political capital, talented staff, and much of its ability to cement pre-crisis collaborative relationships as a result of its incorporation into DHS. Although the Coast Guard fared relatively better, this research uncovered no evidence to suggest that the creation of DHS significantly enhanced its ability to execute collaborative search and rescue operations.

The benefits of consolidation during the chaotic response to Hurricane Katrina were dubious. There is little evidence to support the notion that DHS components collaborated more effectively with one another then they did with other agencies and departments, such as the National Guard. If anything, the poor design and implementation of the National Response Plan by DHS confused rather than clarified

administrative arrangements. The Stafford Act already bestowed designated federal coordinating officers with the authority to task other federal departments and agencies to complete tasks. The addition of a principal federal official in an advisory capacity and the secretary of homeland security into the unified command resulted in extensive confusion. Collaborative performance only improved significantly when Admiral Thad Allen was "dual-hatted" as principal federal official and federal coordinating officer for all three affected states, suggesting that crisis governance arrangements should skew towards consolidating administrative authority in the field rather than in the senior-most echelons of the Federal Government.

The performance of the Coast Guard during Deepwater Horizon does not yield significant insight regarding the degree to which the DHS has improved the integration of homeland security missions. The Oil Pollution Act established the National Response Team, consisting of 15 departments and agencies, to respond to oil spills such as that witnessed in the aftermath of the sinking of the Deepwater Horizon rig. Of these fifteen entities, only two—the Coast Guard and FEMA—are housed within the DHS. More importantly, the Coast Guard's most important partners were from departments and agencies other than DHS. The role of FEMA in the Deepwater Horizon response was, in fact, very low profile, making it difficult to assess the degree to which departmental integration may or may not have improved over time.

This analysis of the effects of federal interagency consolidation suggests a number of conclusions. First, the benefits of departmental integration include new opportunities to align budgets and programs. However, there is significant risk that specific missions and constituencies will be sacrificed in favor of others, as was

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emergency management in the case of the DHS. Second, the effects of interagency integration on crisis collaboration are minimal. It is plainly impossible to aggregate all of the departments and agencies with critical crisis responsibilities within a single administrative entity below the level of the President of the United States. Moreover, the true fault lines of collaborative performance lie at intergovernmental boundaries, rendering such a solution even less effective. There is broad consensus among scholars— and increasing recognition among policymakers—that the design of the federal homeland security apparatus does not adequately take into account intergovernmental considerations.[983] As demonstrated in both cases, the most successful crisis governance arrangements establish a simple unified authority in the field, as close to the scene of the disaster as possible.

[983] See, for example: Jonathan Walters, "Intergovernmental Relations and Federalism," in *American Intergovernmental Relations: Foundations, Perspectives, and Issues*, ed. Jr. Laurence J. O'Toole Jr. (Washington, DC: CQ Press, 2007); Walters and Kettl, "The Katrina Breakdown."; Stephen Flynn, *The Edge of Disaster: Rebuilding a Resilient Nation* (New York: Random House, 2007); Patrick Roberts, "Dispersed Federalism as a New Regional Governance for Homeland Security," *Publius: The Journal of Federalism* 38, no. 3 (2008).

Glossary[984]

Area Committee
As provided for by Clean Water Act (CWA) sections 311(a)(18) and (j)(4), the term refers to the entity appointed by the President consisting of members from the qualified personnel of Federal, State, and local agencies with responsibilities that include preparing an Area Contingency Plan for an area designated by the President.

Area Contingency Plans
As provide for by Clean Water Act (CWA) sections 311 (a) (19) and (j)(4), means the plan prepared by an area committee that is developed to be implemented in conjunction with the National Contingency Plan and Regional Contingency Plan (RCP), in part to address removal of a worst case discharge and to mitigate or prevent a substantial threat of such a discharge from a vessel, offshore facility, or onshore facility operating in or near an area designated by the President.

Captain of the Port Zone
A zone specified in 33 CFR Part 3 and, for coastal ports, the seaward extension of that zone to the outer boundary of the exclusive economic zone (EEZ).

Containment Boom
Boom that is used to collect and hold oil on the surface of the water for recovery by skimmers or similar collection devices. The regulations require containment booms to be equal to 1,000 feet or twice the length of the largest vessel served, plus sufficient for the efficient operation of recovery devices.

Department of Security (DHS)
DHS is a Cabinet Department of the United States Federal Government Homeland with the primary responsibilities of protecting the territory of the United States from terrorist attacks and responding to natural disasters.

Federal on-scene coordinator
The Federal Water Protection Control Act Section 311(c) authority for coastal zone spill response has been delegated to the (federal on-scene coordinator) Department of Homeland Security (DHS) and the United States Coast Guard (USCG) is operating by Executive Order. USCG federal on-scene coordinators that implement this authority are pre-designated by 33 CFR 1.01-80 and Regional Contingency Plans and are typically USCG Sector Commanders.

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[984] Most of the definitions included herein are derived from the following source: "Bp Deepwater Horizon Oil Spill: Incident Specific Preparedness Review."

Per 40 CFR 300.135, the federal on-scene coordinator shall direct response efforts and coordinate all other efforts at the scene of an oil spill. federal on-scene coordinators have access to the Oil Spill Liability Trust Fund (OSLTF). Under 40 CFR 300.140(b), there shall be only one federal on-scene coordinator at any time during the course of a response operation. Additionally, under 40 CFR 300.322 requires the federal on-scene coordinator to direct all Federal, State, tribal, or private action as to remove a discharge in the case of substantial threat to public health and welfare.

Homeland Security Presidential Directive–5
Entitled "Management of Domestic Incidents," the directive enhances the ability of the United States to manage domestic incidents by establishing a single, comprehensive National Incident Management System.

Incident Action Plan
The incident action plan, which is initially prepared at the first meeting of the Unified Command, contains general control objectives reflecting the overall incident strategy and specific action plans for the next operations period.

Incident Command Post
The field location at which the primary tactical level, on-scene incident command functions are performed. The incident command post may be collocated with the incident base or other incident facilities.

Incident Command System
A standardized on-scene emergency management concept specifically designed to allow its user(s) to adopt an integrated organizational structure equal to the complexity and demand of single or multiple incidents, without being hindered by jurisdictional boundaries.

In Situ Burning
In situ burning, or ISB, is a technique that can be used to respond to an oil spill. ISB involves the controlled burning of oil that has spilled from a vessel or a facility, at the location of the spill. When conducted properly, ISB significantly reduces the amount of oil on the water and minimizes the adverse effect of the oil on the environment.

Interagency Solution Group
Established to fully support the response to the Deepwater Horizon incident; serves as an incident-specific workgroup for the National Response Team to coordinate "whole of Government" policy and procedural recommendations for the National Incident Command, Unified Area Command, and applicable Unified Incident Commands.

Joint Information Center
A facility established within or near the incident command post where the public information officer and staff can coordinate and provide information on the incident to the public, media, and other agencies.

National Response Framework
The National Response Framework presents the guiding principles that enable all
response partners to prepare for and provide a unified national response to disasters and
emergencies—from the smallest incident to the largest catastrophe. The National
Response Framework establishes a comprehensive, national, all-hazards approach to
domestic incident response.

National Response Team
The U.S. National Response Team is an organization of 15 Federal
Departments and Agencies responsible for coordinating emergency
preparedness and response to oil and hazardous substance pollution
incidents. The Environmental Protection Agency (EPA) and the U.S. Coast
Guard (USCG) serve as Chair and Vice Chair respectively. The National
Oil and Hazardous Substances Pollution Contingency Plan and the
Code of Federal Regulations (40 CFR part 300) outline the role of the National Response
Team and Regional Response Teams (RRTs). The 15 Federal Agencies that
make up the National Response Team include EPA, USCG, U.S. Department of State
(DOS), U.S. Department of Defense (DoD), U.S. Department of the Interior (DOI),
U.S. Department of Justice (DOJ), U.S. Department of Transportation
(DOT), U.S. Department of Energy (DOE), General Services
Administration (GSA), Federal Emergency Management Agency (FEMA–
DHS), U.S. Department of Agriculture (USDA), Department of Labor
(DOL), Department of Health and Human Services (HHS), Nuclear
Regulatory Commission (NRC), and Department of Commerce/National
Oceanic and Atmospheric Administration (NOAA).

National Strike Force
The National Strike Force (NSF) provides highly trained, experienced personnel and
specialized equipment to Coast Guard and other Federal agencies to facilitate
preparedness for and response to oil and hazardous substance pollution incidents in order
to protect public health and the environment. The NSF's area of responsibility covers all
Coast Guard Districts and Federal Response Regions. The NSF totals over 200 active
duty, civilian, reserve, and auxiliary personnel and includes the National Strike Force
Coordination Center (NSFCC), the Atlantic Strike Team, the Gulf Strike Team, the
Pacific Strike Team, and the Public Information Assist Team (PIAT).

Oil Pollution Act of 1990
The Oil Pollution Act imposes liability for removal costs and damages resulting from an
incident in which oil is discharged into navigable waters or adjoining shorelines or the
exclusive economic zone. The Act is one of the main Federal statutes establishing
liability for damages or injuries to, or loss of natural resources. It also provides limits on
liability for removal costs and damages under certain circumstances.

Oil Spill Removal Organization
Any person or persons who own or otherwise control oil spill removal resources that are

designed for, or are capable of, removing oil from the water or shorelines. Control of such resources through means other than ownership includes leasing or subcontracting of equipment or, in the case of trained personnel, by having contracts, evidence of employment, or consulting agreements. OSROs provide response equipment and services, individually or in combination with subcontractors or associated contractors, under contract or other means approved by the President, directly to an owner or operator of a facility or tank vessel required to have a response plan under 33 USC 1321(j)(5). OSROs must be able to mobilize and deploy equipment or trained personnel and remove, store, and transfer recovered oil. Persons such as sales and marketing organizations (e.g., distributorships and manufacturer's representatives) that warehouse or store equipment for sale are not OSROs.

Protective Boom
Boom used for deflecting/diverting or otherwise influencing oil on the water surface away from sensitive environments, often, but not always, toward containment sites.

Regional Response Team
There are 13 Regional Response Teams (RRTs), 1 for each of 10 Federal regions plus 1 for Alaska, 1 for the Caribbean, and 1 for the Pacific Basin. Each RRT maintains a Regional Contingency Plan (RCP) and has State as well as Federal Government representation. EPA and the Coast Guard co-chair the RRTs. Like the National Response Team, the standing RRTs are planning, policy, and coordinating bodies and do not respond directly to the scene. The RRT provides assistance as requested by the On-Scene Coordinator during an incident.

Response Resource Inventory
The Oil Pollution Act of 1990 mandated the creation of a national database of response resources that would be maintained by the Coast Guard National Strike Force Coordination Center (NSFCC). The RRI includes data received from companies that want to have their equipment listed in a publicly accessible system, as well as data generated from the OSRO classification program. Participation by private industry is voluntary except for classified OSROs, whose participation becomes mandatory when they apply for a classification. The RRI has three modules: Data Collection, OSRO Classification, and Inventory.

Responsible Party
Pursuant to section 1002 of Oil Pollution Act 90 and other Federal laws, the RP is liable for costs of Federal removal and damages. In accordance with 40 CFR 300.105, the RP is included in the basic framework for the response management structure that brings together the Federal Government and State governments.

Spill of National Significance
A spill that, due to its severity, size, location, actual or potential impact on the public

health and welfare or on the environment, or the necessary response effort, is so complex that it requires extraordinary coordination of Federal, State, local, and responsible party resources to contain and clean up the discharge.

Unified Area Command
A unified area command is established when incidents under an area command are multi-jurisdictional.

Worst case discharge
In the case of a vessel, a discharge in adverse weather conditions of its entire cargo, and, in the case of an offshore facility or onshore facility, the largest foreseeable discharge in adverse weather conditions.

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